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THE IBIS,

A

QUARTERLY JOURNAL OF ORNITHOLOGY.

EDITED BY
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IN THE UNIVERSITY OF CAMBRIDGE,
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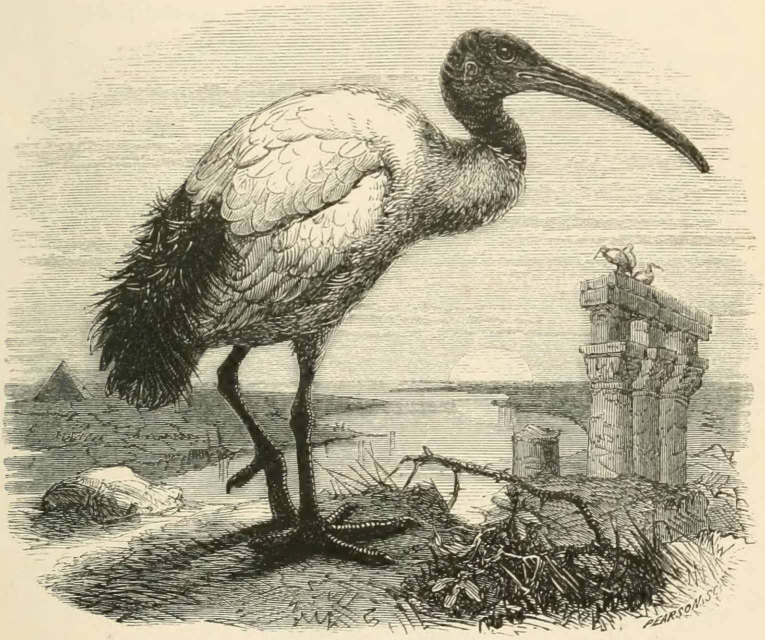

VOL. II. 1866.

NEW SERIES.

> Ibidis interea tu quoque nomen habe!
> —Ovid.

LONDON:
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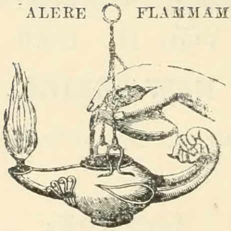

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PREFACE.

THERE is little need for much to be said by way of Preface to 'THE IBIS.' Its objects are well known to, and fully appreciated by, those who are the most active labourers in the field of Ornithology, as every succeeding Number testifies by the new names that are enrolled on its list of contributors, while its old supporters are as ready as ever to communicate to its pages the results of their studies at home or observations abroad.

To break the continuity of a Journal having a scope so limited as that of 'THE IBIS' by commencing a New Series was an experiment involving no small risk, and this risk seemed the greater to the present Editor when he considered that under the skilful guidance of his friend and predecessor, Mr. P. L. SCLATER, the Old Series had won for itself such a high scientific position. Owing to the generous support with which the New Series has met, this danger, it is believed, has been successfully surmounted, and the Editor has now only to express his grateful acknowledgements to the Ornithologists of every country and of every class for the cordial assistance they have rendered him in the discharge of his duty.

A. N.

Magdalene College, Cambridge.
September 1866.

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CONTENTS OF VOL. II.—NEW SERIES.

(1866.)

NUMBER V., *January*.

Page

I. On the Solan Goose, or Gannet (*Sula bassana*, Linn.). By ROBERT O. CUNNINGHAM, M.D. (Plate I.) 1

II. Notes on the Birds of Southern Texas. By H. E. DRESSER 23

III. Field notes on *Lophortyx gambeli*. By ELLIOTT COUES, M.D. 46

IV. On a New Species of the genus *Polyplectron*. By D. G. ELLIOT, F.Z.S., &c. 56

V. Note on the Species of the genus *Muscisaxicola*. By P. L. SCLATER, M.A., Ph.D., F.R.S., &c. 56

VI. On the Ornithology of Palestine. (Part III.) By the Rev. H. B. TRISTRAM, M.A., F.L.S., C.M.Z.S. (Plate II.) . . 59

VII. Notes on the Birds of the Azores. By FREDERICK DU CANE GODMAN, F.L.S., F.Z.S., &c. (Plate III.) 88

VIII. Note on "*Kittaçincla auricularis*," Swinhoe. By P. L. SCLATER, M.A., Ph.D., F.R.S., &c. (Plate IV.) . . . 109

Page

IX. Notices of Recent Ornithological Publications:—

1. *English*:—Tristram's 'Land of Israel;' Gould's 'Handbook to the Birds of Australia;' Travers on the Birds of the Chatham Islands 111

2. *German*:—Von Pelzeln on the Ornithology of the 'Novara' Voyage; Seidensacher on the Birds of Cilli 115

3. *Dutch*:—Harting on the Episternal Apparatus of Birds; Schlegel on the Kingfishers of the Dutch Indies; Schlegel's 'Dierentuin' 116

4. *Russian*:—Radde's 'Birds of South-eastern Siberia' . . 118

5. *American*:—Lawrence on Birds of Panama; Bryant's Papers in the Boston 'Proceedings' 119

X. Letters, Announcements, &c.:—

Letters from Messrs. Swinhoe, Howard Saunders, E. P. Ramsay, Whitely, and J. H. Gurney. Interesting Discovery of Bones of *Didus ineptus* in Mauritius 121

NUMBER VI., *April.*

XI. A Voice on Ornithology from Formosa. By ROBERT SWINHOE, Her Majesty's Consul, F.Z.S., &c. (Plate V.) . . 129

XII. On a New Genus of African Birds. By GUSTAV HARTLAUB, M.D., For. Mem. Z.S., &c. (Plate VI.) 139

XIII. Account of the late Discovery of Dodos' Remains in the Island of Mauritius. By GEORGE CLARK 141

XIV. On some Extinct Gigantic Birds of the Mascarene Islands. By H. SCHLEGEL, Director of the National Museum of the Netherlands, F.M.Z.S., &c. 146

Page

XV. Evidence of a Species, perhaps extinct, of a large Parrot (*Psittacus mauritianus*, Ow.), contemporary with the Dodo, in the Island of Mauritius. By Professor OWEN, F.R.S., &c. 168

XVI. On Five New Species of Birds from the Feejee Islands. By GUSTAV HARTLAUB, M.D., For. Mem. Z.S., &c. . 171

XVII. Notes on the Ornithology of Spain. By Lord LILFORD, F.L.S., F.Z.S., &c. 173

XVIII. A further Contribution to the Ornithology of Guatemala. By OSBERT SALVIN, M.A., F.L.S., &c. 188

XIX. Notices of Recent Ornithological Publications:—

1. *English*:—Groom-Napier's 'Food, Use, and Beauty of British Birds;' Swinhoe's 'Neau Show;' Lord on Nests and Eggs collected in North-west America; Taylor on *Zosterops cærulescens* in New Zealand 206
2. *German*:—Von Pelzeln on Variation of Plumage in Birds, and on new *Caprimulgidæ* from Brazil 209
3. *Dutch*:—De la Fontaine's 'Faune du Pays de Luxembourg;' Schlegel on *Charitornis albertinæ*, and 'Contributions à la Faune de Madagascar' 210
4. *Danish*:—Steenstrup on the habits of the Goldfinch . . 212
5. *Norwegian*:—Collett on the Birds of Gudbrandsdal and Dovre 212
6. *American*:—Elliot's 'Monograph of the *Tetraoninæ*,' parts 4 and 5; Lawrence on the Birds of Central America . . 213

XX. Letters, Announcements, &c.:—

Letters from Messrs. Dawson Rowley and Archer Briggs, and Prof. Perceval Wright; Extracts from letters of Capt. Bulger, Mr. E. L. Layard, Capt. Beavan*, and Drs. Jerdon and D. Scott: Communications from Prof. Baird and Mons. F. Pollen . . . 215

---

* By mistake printed Capt. *Blair* at p. 220.

Page

Number VII., *July*.

XXI. The Ornithology of India.—A Commentary on *Dr. Jerdon's* 'Birds of India.' By Edward Blyth, late Curator of the Museum of the Asiatic Society at Calcutta, Hon. Mem. As. Soc. 225

XXII. From Arizona to the Pacific. By Elliott Coues, M.A., M.D. 259

XXIII. On the Genus *Oxynotus* of Mauritius and Réunion. By François Pollen, Honorary Assistant of the Royal Museum of Leyden, &c. (Plates VII. and VIII.) 275

XXIV. On the Ornithology of Palestine. (Part IV.) By the Rev. H. B. Tristram, M.A., F.L.S., C.M.Z.S. 280

XXV. Ornithological Notes from Formosa. By Robert Swinhoe, Her Majesty's Consul, F.Z.S., &c. (Plate IX.) . . 292

XXVI. On the *Muscicapa melanictera* of Gmelin. By the Viscount Walden, F.L.S., F.Z.S., &c. 316

XXVII. Letters, Announcements, &c.:—

Letters from Captain Powlett-Orde and Mr. C. B. Wharton; Extract from a letter of Mr. C. J. Andersson 323

Number VIII., *October*.

XXVIII. Additional List of Birds from Port Denison. By Edward P. Ramsay 325

XXIX. The Ornithology of India.—A Commentary on *Dr. Jerdon's* 'Birds of India.' By Edward Blyth, late Curator

Page

of the Museum of the Asiatic Society at Calcutta, Hon. Mem. As. Soc. 336

XXX. Notes on the Ornithology of Spain. By Lord LILFORD, F.L.S., F.Z.S., &c. (Plate X.) 377

XXXI. Ornithological Notes from Formosa. By ROBERT SWINHOE, Her Majesty's Consul, F.Z.S., &c. (Plate XI.) . . 392

XXXII. Note on the Distribution of the Species of *Chasmorhynchus*. By P. L. SCLATER, M.A., Ph.D., F.R.S. 406

XXXIII. Notices of Recent Ornithological Publications:—

1. *English*:—Owen's 'Anatomy of Vertebrates,' vol. ii.; Gould's 'Birds of Asia,' part xvii.; Newman's Reprint of Montagu's 'Ornithological Dictionary;' Ornithological papers in 'Journal of Asiatic Society' for 1865 408
2. *French*:—Report on A. Milne-Edwards's 'Recherches d'Anatomie Comparée' 413
3. *Italian*:—De Filippi's 'Viaggio in Persia;' Salvadori's papers in 'Atti della Società Italiana' 414
4. *Scandinavian*:—Sundevall's 'Conspectus Avium Picinarum' 415
5. *American*:—Baird on 'Distribution and Migrations of North American Birds;' Elliot's 'Birds of North America;' Baird's 'Review of American Birds;' Cassin's 'Fasti Ornithologiæ,' No. 2, and 'Study of the *Icteridæ*;' Lawrence's 'Catalogue of Birds observed on New York, &c.' . . . 416

XXXIV. Letters, Announcements, &c.

Letters from Mr. E. P. Ramsay, Capt. R. C. Beavan, Messrs. W. V. Legge, J. H. Gurney, and J. H. Gurney, Jun., Lord Walden, and Mr. E. L. Layard; Announcement of English Ornithological works in preparation, and of Mr. Andersson's projected 'Avifauna of South-western Africa' 419

Index 427

PLATES IN VOL. II.

NEW SERIES.

Page
I. Sula bassana, *juv.* 23
II. Caprimulgus tamaricis 75
III. Pyrrhula murina 97
IV. Sibia auricularis 109
V. Turdus albiceps 135
VI. Phlexis layardi 139
VII. Oxynotus typicus . . . . } 278
VIII. —— newtoni . . . . }
IX. Suthora bulomachus 300
X. Eggs of Aquila pennata and Cyanopica cooki 382
XI. Cyornis vivida 393

ERRATA AND CORRIGENDA.

Page	Line	
97,	39,	*for* to *read* of.
107,	19,	*for* egretta *read* alba.
131,	34,	*for* p. 58 *read* Ibis, 1863, p. 282.
175,	22,	*for* Andalusia *read* Andalucia.
211,	34,	*for* distinction *read* designation.
220,	19,	*for* Captain Blair *read* Captain Beavan.
222,	30 and 34,	*for* gnats *read* grubs.
310,	31,	for *rubicapillus* read *rubricapillus*.
324,	29,	for *Apterodytes* read *Aptenodytes*.
346,	19,	dele *Eudynamis mindanensis*.

THE IBIS.

NEW SERIES.

No. V. JANUARY 1866.

I.—*On the Solan Goose, or Gannet* (Sula bassana, *Linn.*). By ROBERT O. CUNNINGHAM, M.D.

(Plate I.)

THE earliest reference to this well-known bird with which I am acquainted, is to be found in the celebrated Anglo-Saxon Chronicle, a work generally acknowledged to have been the result of the labours of a number of successive hands, and recounting the events which occurred from Cæsar's invasion to shortly after the middle of the twelfth century. In the account of the events recorded as having taken place A.D. 975, there occurs the following passage:—

Anꝺ þa ƿeaꞃð	Then too was driven
eac aꝺꞃæꞅeꝺ	Oslac beloved
ꝺeoꞃ-moꝺ hæleð	an exile far
Oꞅlac oꝼ eaꞃde.	from his native land
oꝼeꞃ ẏða-ᵹeƿealc.	over the rolling waves,—
oꝼeꞃ ᵹanoꞇeꞅ bæð.	over the ganet-bath.*

"Solendæ" are also briefly mentioned by the father of Scottish history, John de Fordun, in the sixth chapter of the first book of his 'Scotichronicon'†, as building in great numbers on the

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* Edition by the Rev. J. Ingram, B.D. London, 1823.

† Johannis de Fordun Scotichronicon, cum Supplementis ac Continuatione Walteri Boweri, Insulæ Sanctæ Columbæ Abbatis: E Codicibus MSS. editum. Edinburgi, 1747.

Bass Rock; but the first detailed record of the habits of the species that we meet with occurs in the 'Scotorum Historiæ' of Hector Boece, published in 1526. In this curious and interesting old work we are informed that the Bass Rock, in the Firth of Forth, is inhabited by an immense quantity of birds, called Solands in the vernacular tongue, and not unlike those termed Water-Eagles (*aquilas aquatiles*) by Pliny; that when they first arrive in the early spring, they collect wood for building their nests in such abundance, that the inhabitants of the island are thereby enabled to provide themselves with a stock of fuel sufficient to last them throughout the year; that they feed their young with very delicate fish, which they obtain by diving with great velocity from the rock into the sea; finally, that the young are a source of great profit to the lord of the castle, for a very valuable oil, of great service in curing diseases of the hip and other of the joints, is obtained from the fat lying beneath the skin and that associated with the internal parts.

The next historian of the bird appears to have been William Turner, an English physician and naturalist, of considerable note in his day. In a small octavo volume on the birds made mention of by Pliny and Aristotle*, which he published at Cologne in 1544, he tells us that the "solend guse," is a sea-bird, "ex uenatu piscium uictitans," a little less than the Bernicle, but a veritable Goose as regards form and voice; that it builds on the high cliffs of the Bass island, in the Scottish sea, but nowhere else in Britain; that it tends its young with such affection that when boys are let down the face of the rock by means of ropes, for the purpose of carrying them off, it attacks them with great ferocity; and that from its fat the Scots make an ointment which is regarded as of great value in the treatment of many diseases.

Conrad Gesner, in the third book of his 'Historiæ Animalium'†, which appeared eleven years subsequently to the publication of Turner's work, commences his description of the Solan Goose with a quotation from that author, and then goes on to state that he has learned from an erudite Scotchman that these geese, called Solan Geese, exceed the domestic geese in length, but are not so broad; that they lay their eggs on rocks and cover them with one foot during the process of incubation, whence, perchance, the origin of the name Soland, "à solea, id est planta pedis;" and that the old birds feed their young with fish, in the selection of which they evince considerable discrimination, for, if after they have caught one fish, they see another which they regard as superior to it, they reject the first and secure it. He then concludes by quoting the passage from Hector Boece, of which we have shortly before spoken. In the same year in which Gesner's work was published, Olaus Magnus issued his 'Historia de Gentibus Septentrionalibus'*; and in it is contained an account of the bird, which, though it does differ very materially from those of previous authors, nevertheless provides us with a few additional particulars regarding its habits, which I subjoin:—"Hæ anates in vere turmatim à Meridie in rupem de Bass quotannis veniunt, & rupem duobus, vel tribus diebus circumuolitant: quo in tempore rupem inhabitantes, nullum tumultum faciunt. Tunc nidificare incipiunt, & tota æstate manent, ac piscibus viuunt: & incolæ rupis, piscibus ab illis captis pascuntur. Ascendunt enim illarum nidos, vt superius de pullis aquilæ dictum est, & ad libitum pisces acceptant. In capiendis autem piscibus mirabilis est huius auis industria. In fundo maris lynceis oculis piscem contemplatur: contra quem se præcipitat, sicuti contra ardeam nisus: quem protinus ore et vngulis extrahit. * * Iuniores anates, aut anserculos in terra vicina vendunt. * * In fine autumni rupem triduo circũuolant & posteà agminatim ad partes Meridionales pro tota hyeme auolant, vt illic viuant in æstate: quia quando nobis est hyems, Meridionalibus est æstas. Diutissimè hæ anates viuunt: quod per quasdam signatas incolæ perpenderunt. Triginta, aut quadraginta in rupe bellatores harum auium fructus alit, & domino rupis nonnihil vectigalis penditur."

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* Avivm præcipvarvm, quarvm apvd Plinivm et Aristotelem mentio est, brevis & succincta historia. Coloniæ, 1544.

† Conradi Gesneri Tigurini, medici & Philosophiæ Professoris in Schola Tigurina, Historiæ Animalium Liber III. qui est de Auium natura. Tiguri, MDLV. p. 158.

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* Olaus Magnus, Historia de gentibus septentrionalibus. Romæ, 1555. Lib. XIX. de avibus, Cap. IX.—De mirabili generatione Anatum Scotiæ.

The Gannet is also briefly noticed by Dr. John Caius, in his tract, 'de rariorum animalium atque stirpium historia,' which was published in 1570. In speaking of the *Anser Brendinus*, he says: "Non est ergo Scotorum Bassanus anser, qui in Basse Scotorum Insula nidum ponit atq; oua, à qua nomen habet. In hanc insulã rupem existentem, nec in summo quantam Miluus oberret (vt Poëta dixit) sed exiguam, venturi stato anni tempore anseres, quo prius speculatu, qua obseruatione præmissis nuntijs vtantur quàm ingrediuntur: quo anni tempore hoc faciant, qua solitudine insulæ, concludentibus se incolis ad aliquot dies, donec se firmauerint anseres, ne abigant, quanta multitudine atq; densitate inuolent, sic vt in serenitate solem adimant, quot pisces afferant, quot oua pariant, & quantos fructus in annos ex eis anserumq; plumis atq; oleo percipiant insulani (nam Pupinorum pinguedinem habent atq; gustũ) longum esset recensere." Ulysses Aldrovandus devotes a chapter of his 'Ornithologia'* to the "Bass or Scottish Goose;" but he does not favour us with any original remarks on the subject, contenting himself by merely quoting the observations of Gesner and Boece.

The next account of the bird, in so far as I am aware, is that given by Clusius, in the 'Auctarium' to his 'Exoticorum Libri'†, and entitled "Sula Hoieri." He states that the specimen from which it was taken was obtained in the year 1605, in the Færœ isles, where it is called "Sula," and that he himself is doubtful whether it ought to be classed among the Gulls or the Geese, but that the friendly reader can settle the point to his own satisfaction. His description of the dimensions and plumage, which will be seen to be tolerably correct, is as follows: "Ab imo collo ad ouropygium usque ductâ per dorsum mensurâ pedem Romanum longa erat; à capitis vertice ad dorsum usque, uncias undecim, colli ambitus totidem crassus erat; rostri, quod valde mucronatum & firmum habebat, longitudo, unciæ quinque cum semisse: rostri pars crassior, & quæ circa oculos, nigra erat: corporis ambitus viginti quatuor uncias, hoc est, binos pedes Romanos explebat, alæ plus quàm pedem longæ, caudæ verò longiores pennæ septem unciarum longitudinem non superabant; crura satis tenuia & infirma habebat, eaque binis unciis non longiora, & nigra prorsus coloris, ut etiam pedes, qui valde lati, quatuor digitis constantes, quorum exterior & illi proximus (qui longissimi) tribus articulationibus constabant, tertius duabus, minimus unâ, singuli parvo ungue præditi præter secundum, cujus unguis paullo latior, & altero latere serratus, omnes autem nigrâ membranâ simul connexi: longiores porrò & remiges alarum pennæ totæ nigræ, ut etiam tres illæ quæ in caudâ inferiores et longiores, mediumque caudæ locum occupantes*: reliquum corpus albæ pennæ tegebant; quæ tamen in dorso, non nihil subflavescebant, tamquam luto aut pulvere conspersæ fuissent."

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* Ulyssis Aldrovandi Ornithologiæ tomus tertius ac postremus. Lib. XIX. Cap. XX.—De Ansere Bassano sive Scotico (p. 162).

† Caroli Clusii Atrebatis Exoticorum Libri decem. (Antwerp) 1605 (p. 367).

Forty-five years later we find a notice of the Gannet in Jonston's 'Historia Naturalis de Avibus' (p. 94). It contains but little additional information regarding it, beyond the fact that the flesh is hard and dry, as the author can state from personal experience of it derived in the course of a visit to Scotland in 1623; but it is accompanied by a most remarkable figure, bearing the title of "*Schotisch Gans*" and representing a singularly hideous bird, with huge nostrils and tarsi armed with formidable spurs†.

In the well-known 'Exercitationes de Generatione' of the celebrated William Harvey, which was published in 1651, there is a very interesting passage (p. 30), descriptive of the nidification of the Gannet on the Bass Rock. We are there informed that the surface of the island in the months of May and June is almost entirely covered with nests, eggs, and young birds, so as to render it almost impossible to avoid trampling on them; that such is the density of the flight of the old birds in the air, that like a cloud they darken the sun and the sky; and that the screaming and din are such that you can hardly hear the voice of one who addresses you. He afterwards proceeds to make some observations on the white crust covering a very considerable portion of the rock (caused by the excrement of the Gannet and other sea-birds), remarking that it is so hard and solid and adheres so intimately to the rock, that it might readily be mistaken for the natural soil of the place. In the magnificent geographical work of Blaev *, published at Amsterdam in 1662, we find two detailed and, on the whole, very accurate notices of the Solan Goose. In the first of these, which occurs in the course of a description of "Lauden," or "Lothien," it is stated (p. 40) that at a particular time of the year sea-birds like Geese, and thence so called, arrive from foreign parts and establish themselves on the Bass Rock, where they deposit their eggs and hatch their young. These birds are found nowhere else in the whole of Europe, another rock in the Firth of Clyde† excepted. There is such a quantity of them that they are a source of great profit to the proprietor of the island; for not only is their flesh fit for food, but their feathers serve for making mattresses. They come to the island about the middle of April, and take their departure about the middle of September; but previously to their arrival in flocks they send before them solitary individuals to act as scouts. They only produce one egg at a time, which they dexterously place on one end and keep warm with one of their feet, rarely or never deserting it till the young bird is hatched, and this because if it is temporarily left, and then moved by any person from its original position, it is impossible to replace it so as to remain firmly upon the rock, and the bird is therefore obliged to lay another in its place. It is peculiar to these birds that they cannot fly out of sight of the sea, hence they are often caught when driven inland by the force of the wind. The young, when they attain the magnitude of the domestic goose, are sweet and fit for eating, but the flesh of the old birds is hard, lean, and dry. The inhabitants of the island collect their nests, using them as fuel. The following

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* This statement, as to the occurrence of black feathers in the tail is rather curious, reminding one of the South African *Sula melanura*. It is probably an indication of youth.

† [This is a reduced copy from Aldrovandi's figure, *Ornith.* &c., tom. i. p. 163.—Ed.]

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* Geographiæ Blavianæ Volumen sextum, quo Liber XII, XIII, Europæ continentvr. Amstelædami. Labore & Sumptibus Joannis Blaev.

† It is almost needless to say that Ailsa is referred to.

origin of the name Solan is then given, and will be seen to differ from that commonly adduced :—"Hi anseres nomine vulgari è Latino, ut puto, detorto, Solen vocantur, quod male pronunciant Soland, id est, anniversarii : ad nos enim veniunt semel unica solum vice in toto anno." The second passage relating to the bird is to be found in the account of the islands of the Firth of Forth (p. 90), and contains the following additional particulars :—"Edinburgenses 25 sc. solvunt pro uno ansere. * * coloris subcinericei sunt juniores, adulti albi, oblongum habent collum more gruis, rostrum acutissimum majoris digiti longitudine, & flavo colore. * * Os, quod vulgo *de Bril*[*] appellamus, in aliis avibus separari ab osse pectoris potest, in hoc vero minime, ita ut nulla vi avelli queat, ideo illi annexum, ne in pontum desiliens, dum haleces sectatur, nimia sua violentia collum rumpat. * * Multi tamen ex iis hoc modo interimuntur; Asserem nautæ glabrum lævigant & dealbant, eique haleces annectunt, quem asserem loco puppis cymbæ alligant, & quem Anseres videntes & arripere rostro conati, rostrum tam firmiter asseri impingunt, ut illud evellere nequeant, sed capiantur, aut potius se ipsos capiant."

The Gannet is mentioned several times by Ray, in his 'Itineraries.' He informs us that on the 19th August, 1661, on his way to Leith he "viewed Tontallan Castle, and passed over to the Basse Island, where we saw on the rocks innumerable of the soland geese. The old ones are all over white, excepting the pinion or hard feathers of their wings, which are black. The upper part of the head and neck, in those that are old is of a yellowish dun colour; they lay but one egg apiece, which is white and not very large. They are very bold and sit in great multitudes till one comes close up to them, because they are not wont to be scared or disturbed. The young ones are esteemed a choice dish in Scotland, and sold very dear (1*s.* 8*d.* plucked). We eat of them at Dunbar. They are in bigness little inferior to an ordinary goose. The young one is upon the back black, and speckled with little white spots, under the breast and the belly gray. The beak is sharp-pointed, the mouth very wide and large, the tongue very small, the eyes great, the foot hath four toes webbed together. It feeds upon mackrel and herring, and the flesh of the young one smells and tastes strong of these fish." The same author also records, in the course of his peregrinations in England, that he "saw many of those birds, which they call gannets, flying about on the water. This bird hath long legs, and a long neck, and flieth strongly. Possibly it may be Catarractes*. He preys upon pilchards, the shoals whereof great multitudes of these fowls constantly pursue." Elsewhere we are told that they are captured "by tying a pilchard to a board, and fastening it so that the bird may see it, who comes down with so great swiftness for his prey, that he breaks his neck against the board."

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[*] The furculum.

Sir Thomas Browne, in his 'Account of Birds found in Norfolk'†, mentions "A large and strong-billed fowl, called a ganet, which seems to be the greater sort of *larus*; whereof I met with one killed by a greyhound, near Swaffham; another in Marshland, while it fought, and would not be forced to take wing: another entangled in a herring-net, which, taken alive, was fed with herrings for a while. It may be named *larus major, leucophæopterus*; as being white and the top of the wings brown."

The account of the bird given by Willughby, in his 'Ornithology'‡, published in 1676, is brief but interesting, inasmuch as the peculiar attachment of the skin to the muscles, in consequence of the interposition of air-sacs, is for the first time taken notice of. He says, "the skin is very full, sticking loose to the flesh." Of the habits of the Gannet, as seen at St. Kilda, Martin seems to have been about the earliest observer. In his interesting little work 'A late voyage to St. Kilda, the remotest of all the Hebrides of Scotland,' published in 1698, we find the following quaint account of its habits:—"The *Solan* Geese hatch by turns; when it returns from its fishing, it carries along with it five or six herrings in its gorget, all entire and undigested: upon whose arrival at the nest, the hatching fowl puts its head in the fisher's throat, and pulls out the fish with its bill as with a pincer, and that with a very great noise, which I had occasion frequently to observe. They continue to pluck grass for their nests from their coming in March till the young fowl is ready to fly in August or September, according as the inhabitants take or leave the first or second eggs. It's remarkable of them that they never pluck grass but on a windy day, the reason of which I enquired of the inhabitants, who said that a windy day is the Solan Goose's vacation from fishing, and they bestow it upon this employment, which proves fatal to many of them, for after their fatigue they often fall asleep, and the inhabitants laying hold on this opportunity are ready at hand to knock them on the head. Their food is herring, mackrels, and *syes* ; English hooks are often found in the stomachs both of young and old *Solan* Geese, though there be none of this kind used nearer than the Isles, twenty leagues distant ; the fish pulling away the hooks in those isles go to St. Kilda, or are carried by the old geese thither ; whether of the two the reader is at liberty to judge.

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* Ray does not appear to have been aware that the Gannet and Solan Goose were the same bird.

† Sir Thomas Browne's Works. Wilkin's edition, vol. iv. p. 314.

‡ Book III. Part III. section II. chap. II. (pp. 328, 329).

"The *Solan* Geese are always the surest sign of herrings, for wherever the one is seen the other is always not far off. There is a tribe of barren *Solan* Geese which have no nests and sit on the bare rocks ; these are not the young fowls of an year old, whose dark colour would soon distinguish them, but old ones, in all things like the rest ; these have a province, as it were, allotted to them, and are in a separated state from the others, having a rock two hundred paces distant from all other, neither do they meddle with or approach to those hatching, or any other fowls. They sympathize and fish together : this being told me by the inhabitants, was afterwards confirmed to me several times by my own observation.

"The *Solan* Geese have always some of their number that keep centinel in the night-time, and if they are surprised, as it often happens, all that flock are taken one after another ; but if the centinel be awake at the approach of the creeping fowlers, and hear a noise, it cries softly, *Grog, Grog,* at which the flock move not ; but if this centinel see or hear the fowler approaching, he cries quickly, *Bir, Bir,* which would seem to import danger, since immediately after all the tribe take wing, leaving the fowler empty on the rock, to return home *re infectâ,* all his labour for that night being spent in vain. Here is a large field of diversion for *Apollonius Tyanæus,* who is said to have travelled many kingdoms over, to learn the language of beasts and birds.

"Besides this way of stealing upon them in the night-time, they are also catched in common gins of horse-hair, from which they do struggle less to extricate themselves than any other fowl, notwithstanding their bigness and strength; they are also caught in the herring loches, with a board set on purpose to float above water, upon it a herring is fixed, which the goose perceiving, flies up to a competent height until he finds himself making a straight line above the fish, and then bending his course perpendicularly, piercing the air as an arrow from a bow, hits the board, into which he runs his bill with all his force irrecoverably, where he is unfortunately taken. The *Solan* Goose comes about the middle of March with a *south-west wind,* warm snow, or rain, and goes away according as the inhabitants determine the time, *i.e.,* the taking away or leaving its egg, whether at the first, second, or third time he lays.

"They preserve the *Solan* Geese in their pyramids for the space of a year, slitting them in the back, for they have no salt to keep them with. They have built above five hundred stone pyramids for their fowls, eggs, &c.

"We made particular enquiry after the number of the *Solan* Geese consumed by each family the year before we came there, and it amounted to twenty-two thousand six hundred in the whole island, which they said was less than they ordinarily did, a great many being lost by the badness of the season, and the great current into which they must be thrown when they take them, the rock being of such an extraordinary height that they cannot reach the boat."

In Martin's subsquent work on the Western Islands, published in 1703, we are favoured with some additions to our knowledge of the habits of the bird and the uses that are made of it. He states, as illustrative of its indiscriminate employment of materials in the construction of its nest, that the steward of St. Kilda told him that in one nest had been found a red coat, and in another a brass dial, an arrow, and some Molucca beans. He also says that "the natives make a pudding of the fat of this fowl in the stomach of it, and boil it in their water-gruel which they call Brochan; they drink it likewise for removing the cough: it is by daily experience found to be an excellent vulnerary."

In O'Flaherty's 'West or H-Iar Connaught,' written in 1684, and published by the Irish Archæological Society in 1846, there occurs (p. 12) the following notice of the bird:—"Here the ganet soares high in the sky to espy his prey in the sea under him, at which he casts himself headlong, and swallows up whole herrings in a morsell. This bird flys through the ships' sailes piercing them with his beak."

An account of the Gannet is given by Sir Robert Sibbald in his 'History, ancient and modern, of the Sheriffdoms of Fife and Kinross, with the description of both, and of the Firths of Forth and Tay, and the Islands in them'*, which was published at Edinburgh in 1710; but as it contains no information which does not occur in the works of his predecessors, it is unnecessary to say more with regard to it. Albin describes the bird in the first volume of his 'Natural History of Birds,' which made its appearance in 1738. He remarks correctly that it "has no Nostrils, but in their stead a Furrow extended on each Side through the whole Length of the Bill." The illustration which accompanies his description is remarkable, for the bird is represented as having five toes!

The next account of the Solan Goose deserving of notice occurs in Bishop Pontoppidan's 'Natural History of Norway,' which was published in 1752, and translated into English three years subsequently. "The Hav Sule," the worthy bishop informs us, "is a large Sea-bird which somewhat resembles a Goose: the head and neck are rather like those of a Stork, excepting that the bill is shorter and thicker, and is yellowish; the legs are long †; a-cross the back and wings the colour is a light blue; the breast and long neck are white; towards the head it is green mix'd with black, and on the top there is a red comb: the tail and wings are both distinguished by some white feathers at the ends, and are large in proportion to the body: when the wings are spread, from the end of one to the other they measure six feet. This bird is eatable either roasted or salted: the Scots call it Gentelman. It is a Bird of passage, or of the wandering unsettled sort. It is not seen in this country before the latter end of January, or beginning of February, when the herring-fishing begins, and then it serves for a sign to give notice of the season. They do not come nearer land than within half a mile; thus the farmer observes when the fish seek the narrow and shallow waters. At Easter these birds are not seen any more, therefore I cannot say much about their breeding. They are so stupid that by laying a few herrings upon a floating board, they may be inticed to the boat and killed with the oar."* A most amusing figure of the bird is given which exhibits the comb on the head very distinctly.

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* Part II. chapter II. p. 47.

† [The translation is here very loose. In the original the sentence stands more correctly, being "The legs are as in a Skarf," i. e. *Phalacrocorax.*—Ed.]

In the 'Systema Naturæ' the Solan Goose constitutes the fifth species of the genus *Pelecanus,* and is thus characterized: "*P. cauda cuneiformi, corpore albo, rostro serrato, remigibusque primoribus nigris, facie cærulea,* * * *Habitat in* Pelago septentrionali, *vix appropinquans littora per* 2 *milliaria; indicat Halecum adventum, quem sequitur Gentleman s. Jaen von Gent dicta*"†.

The last account of the Solan Goose in the works of the older authors to which I shall advert occurs in Walker's 'Essays on Natural History and Rural Economy,' under a description (p. 308) of the Bass and its productions. In the course of his remarks on the habits of the bird, this writer quotes Harvey's account of its nidification, and then goes on to say that his inquiry with regard to certain particulars contained therein had found them to be fabulous, for the keeper informed him that the birds "do not stand upon their egg, as is commonly reported, but sit upon it with their breast, which we saw indeed, like other fowls, but one of their feet is always folded under them upon the egg. Neither is it poised upon its end, but lies upon its side, and they turn it like other fowls."

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* The Natural History of Norway, part. II. Translated from the Danish Original of the Right Revd. Erich Pontoppidan, Bishop of Bergen in Norway, p. 76.

† Editio Duodecima Reformata. Holmiæ, 1766.

Having thus passed in review the various notices of the Solan Goose which are to be met with in the works of the more celebrated of the earlier authors, we may now proceed to offer some observations on our present knowledge of its natural history. The Gannet, or Solan Goose, is the *Anser Bassanus* or *Scoticus* of Gesner, Aldrovandus, Jonston, Willughby, and the greater number of the older authors; the *Sula Hoieri* of Clusius, Willughby and Ray; *Pelecanus Bassanus* of Linnæus, Gmelin, Latham, &c.; the *Sula Bassana* of Brisson and modern authors in general; the *Sula alba* of Meyer, Temminck, and Fleming; the *Weisser Tolpel* of Mayer; the *Bassanische Pelikan* of Bechstein; and the *Fou blanc* and *Fou de Bassan* of French authors. Its popular names are as follows: in English it is termed Gannet and Soland Goose; in Welsh, Gan; in Gaelic, Sulair and Guga; in Norse, Sula and Hafsula; in Greenland, Konksuk; in German, Solendgans and Schottengans; in Dutch, Jaen van Gent; and in French, le Fou.

The name Gannet is intimately connected with our modern English Gander, both words being modifications of the ancient British "gan" or "gans," which is the same word with the modern German "Gans," which in its turn corresponds with the old High German "Kans," the Greek χὴν, the Latin *anser*, and the Sanskrit "hansa"*, all of which possess the same signification, viz. a Goose. The origin of the names Solan or Soland, Sulan, Sula, and Hafsula, which are evidently all closely related, is not so obvious. Martin informs us that "some imagine that the word Solan comes from the Irish Souler, corrupted and adapted to the Scottish language, *qui oculis irretortis e longinquo respiciat prædam.*" The earlier writers in general derive the word from the Latin *solea* in consequence of the bird's supposed habit of hatching its egg with its foot; and in a note intercalated into Ray's description of the Solan Goose in the edition of his Itineraries published by the Ray Society and edited by Dr. Lankester, we are told, though no authority for the statement is given, that "the Gannet, *Sula alba*, should be written Solent Goose, *i.e.*, a channel goose"*.

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* [This word, though applied to a different bird and in a slightly different form, has probably survived to our own time. "Hanser" or "Hernser" (with the still further corruption, as in the old proverb, of "Handsaw") is now-a-days in many places the common name for *Ardea cinerea*, and seems as if it could be hardly anything else than the Sanskrit "hansa." If so, "Heronshaw," abbreviated to "Heron" and "Hern," is naturally from the same root.—Ed.]

The geographical distribution of the Solan Goose is extensive, although its breeding-places are far from numerous. On the coasts of Great Britain and Ireland it appears probable that it is a constant resident, though varying its stations at different times of the year. The localities in which it breeds are limited to Lundy Island, off the coast of Devon, in the British Channel; the Skelig Isles, on the coast of Kerry, in the west of Ireland†; St. Kilda ‡, the most distant of the Outer Hebrides; the Stack of Suliskerry, not far from the Orkneys; Ailsa Craig, at the mouth of the Firth of Clyde; and, last, though not least, the Bass Rock, in the Firth of Forth. Among those parts of the kingdom where it is frequently met with, though it does not breed, are off the coast of Cornwall and in the English Channel generally, various portions of the coasts of Scotland, and the Orkney Isles, where, according to Low, it is very abundant, fishing in great numbers in the numerous bays with which they are indented. Beyond the British Isles the Solan Goose enjoys a wide range, being extensively spread over the northern regions of the Old and New Worlds. In the north of Europe its breeding-stations are Myggenes, the most westerly of the Færoe Isles, and various small islands off the coast of Iceland, of which Grimsey, the Reykjanes Fuglaskér, and some of the Vestmannaeyjar are the principal. It is occasionally met with off the coast of Norway §. Southwards it appears on the shores of

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* [This appears to be a suggestion of Yarrell's, who contributed the ornithological remarks inserted by Dr. Lankester, and is repeated by that author (B. B. 3rd ed. iii. p. 493, *note*). It seems at least as probable that the "Solent" took its name from the bird.—Ed.]

† [It has also been supposed that the Gannet breeds on the Stags of Broadhaven, off the west of Mayo (Thompson's B. Irel. iii. p. 264, *note*). —Ed.]

‡ [The most recent, as well as the most detailed account of this station (which, however, is actually on the islet of Borrera) is that given by Sir William Milner in the 'Zoologist' for 1848 (pp. 2054–2062).—Ed.]

§ Cf. Ibis, 1865, p. 497, *note*.

Holland and France, on the coasts of Spain and Portugal, in the Mediterranean, and off Madeira. Further south than this it seems to give place to the *Sula melanura**. As in Europe, so in America, the breeding-stations of the Gannet are but few in number, being restricted, in so far as I am aware, to an island or islands in the Bay of Fundy, and to four rocks in the Gulf of St. Lawrence, viz. the Great Bird or Gannet Rock, the Little or North Bird Rock, Percé Rock near Gaspé, and Gannet Rock near Mingan. It is of common occurrence on the shores of the United States, and on the north-west coast of the continent; and it is also met with in Greenland, though very rarely, according to Fabricius, who states that it does not breed there.

In endeavouring to give an outline of what is now known of the habits of the Solan Goose, it will be convenient to treat of it as separately noticed in its principal European and American localities; and I shall begin with some remarks on it as seen at the earliest-known habitat of the bird, the Bass Rock, where I have had an opportunity of personal observation. The form and appearance of this celebrated island have been so often and so elaborately described that a very few words will suffice to say all that is necessary on the subject. It is about two miles distant from the southern shore of the Firth of Forth, and three from the venerable town of North Berwick, rises to the height of 420 feet above the level of the sea, and is formed of a huge mass of trap of a character intermediate between greenstone and clinkstone. Its sides rise bold and perpendicular, and on the east and west may be seen the opposite openings of a cavern 30 feet high and 170 feet long, which owes its existence to the hollowing agency of the sea. Its "sloping acclivity," to employ the words of the late Hugh Miller, "consists of three great steps, or terraces, with steep belts of precipice rising between;" of these "the lowest is occupied by the fortress, and furnishes, where it sinks slopingly towards the sea on the south-east, the two landing-places of the island." The middle, situated exactly over the cave, has furnished the site of the ancient chapel of the island, while the upper and largest was once occupied by the garden. The principal birds that breed on the Bass are the Solan Goose, the Foolish Guillemot (*Uria troile*), the Kittiwake (*Larus rissa*), the Cormorant (*Phalacrocorax carbo*), the Shag (*Phalacrocorax graculus*), the Razorbill (*Alca torda*), the Herring-Gull (*Larus argentatus*), the Common Gull (*Larus canus*), the Great Black-backed Gull (*Larus marinus*), and the Puffin (*Fratercula arctica*). The Black Guillemot (*Uria grylle*) is mentioned by Ray, but has not, I believe, been seen by subsequent observers; and the Peregrine Falcon (*Falco peregrinus*) and Eider-Duck (*Somateria mollissima*), which used to build on the island, have for some time disappeared.

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* The poet Robert Browning furnishes us with rather a curious illustration of a mistake arising from ignorance of the habits and distribution of the bird; for in Part III. of 'Paracelsus' we find Festus referring to his son "Aureole's glee when some stray Gannet builds amid the birch-trees by the lake" of Geneva!

The Solan Geese are met with in great numbers on all the several faces of the rock, and one or two colonies occur near the landing-places. Macgillivray estimates the number which he saw on the occasion of a visit to the island in 1831 at about twenty thousand; and, judging from the multitudes I saw when I visited it in 1862, I do not think there has been any material decrease since that time. The Gannets make their appearance about the middle of February or beginning of March, and, as a general rule, take their departure in October. A few, however, seem to remain throughout the winter; for they are not unfrequently seen during that season by the fishermen of the Firth, and towards the close of last December I obtained a full-grown individual which had been caught in a herring-net. The nests were described by the older observers as built of sticks; but either they were mistaken or the Geese have changed their customs; for nowadays, as I can testify from personal observations, they are constructed entirely of grass and seaweeds, particularly the *Fucus digitatus* and other of the common Fucoids. They are built in the form of a flattened cone, the base of which "is about 20 inches in diameter, with a shallow terminal cavity;" and their artificers exhibit great industry in collecting materials for them, tearing up grass and turf with their powerful bills, and frequently engaging in conflicts with one another during the process.

They lay but one egg; but if it is removed another is deposited in its place. It is of an elliptical form, with a dull rough surface, and in its original state is white, but is almost always more or less patched with yellowish-brown dirt, although I have never seen it stained with blood, as is frequently the case with the egg of the American bird, according to Dr. Bryant. I have been informed on good authority that the albumen does not become white when it is boiled, but remains clear and colourless; but I cannot speak from personal knowledge of the fact. According to Macgillivray "it is subjected to what might appear rough usage, for the bird in alighting, flying, or when disturbed by human visitors tosses it about and stands upon it." This habit has probably given rise to the assertion that the egg is hatched by the foot.

The Gannet is but little adapted for progression on land, its gait being an awkward waddle. Judging from the descriptions of Selby and Macgillivray, these birds appear to have been in a very amiable state at the time of their visits to the Bass; for the former states that during incubation, "in consequence of being unmolested, they become very tame; and, where the nests are easily accessible upon the flat surface of the rock on the south-west side of the island, will allow themselves to be stroked by the hand without resistance, or any show even of impatience, except the low guttural cry of *grog, grog*;" while the latter author says that, when sitting, "the Gannets usually allow a person to approach within three feet, sometimes much nearer, so that one may touch them. When one approaches them they merely open their bill, and utter the usual cry, or they rise on their feet and express some degree of resentment, but little apprehension of danger." When I visited the island three years ago my experience was widely different; for the old birds manifested every symptom of displeasure, and even a young bird, but a few weeks hatched, squeaked angrily and made impotent demonstrations of self-defence with its soft little bill. Prof. Innes also, in a note to St. John's 'Natural History and Sport in Moray,' mentions (p. 204) an instance in which a young man suffered for his temerity in venturing to meddle with a gosling in the downy stage; for the infuriated parent made a swoop at his face, and, narrowly missing his eye, caught him by the nose. I can likewise bear witness that the bird is capable of inflicting a most severe bite with the razor-like edge of its mandibles; for on one occasion, when a live specimen was brought to me, it made a cut between two and three inches long on the hand of its captor.

Macgillivray has well described the mode of flight of the Solan Geese in the following words:—"In launching from the cliffs, they frequently utter a single plaintive cry, perform a curve, having its concavity upwards, then shake the tail, frequently the whole plumage, draw the feet backwards, placing them close under the tail on each side, and cover them with the feathers. In some the feet were entirely covered, while in others parts of the toes were apparent. In flying the body, tail, neck, and bill, are nearly in a straight line; the wings extended, and never brought close to the body, and they move by regular flappings, alternating with regular sailings. In alighting, they generally ascend in a long curve, keeping their feet spread, and come down rather heavily, often finding it difficult to balance themselves, and sometimes, when the place is very steep, or when another bird attacks them, flying off to try it a second time." The Gannet appears to have considerable difficulty in taking wing when on low ground; and hence individuals which have flown inland and alighted are not uncommonly captured. Thus Willughby informs us that the bird he described "was taken alive near Coleshil, a market-town in Warwickshire;" and many similar instances are on record.

As has been truly said by a late eminent naturalist, "the early and more recent records of the Gannet are full of fond inventions;" and nowhere is this assertion more fully borne out than in the extravagant accounts that have been given regarding its power of diving. The late William Thompson, for example, in his admirable 'Natural History of Ireland,' states, on the authority of a post-master at Ballantrae, in Ayrshire, that Gannets have been taken in nets at depths of 180 feet in that neighbourhood. Now it seems entirely inconceivable that a Gannet, if ever it penetrated to such a depth, could ever come to the surface again; and even if it were capable of doing so, it is extremely improbable, to say the least, that it would take such an amount of trouble to procure prey that might be obtained so much more easily. Several eminent authors have gone to the other extreme, and deny that the Gannet ever dives at all; but I can testify from personal observation that this is incorrect.

Owing to the extreme power of dilatation which its œsophagus possesses, the bird is capable of swallowing fish of very considerable dimensions. Its food, in the Firth of Forth and the other Scottish localities where it occurs, consists principally of herrings, and, in the English Channel, of pilchards. A specimen which I obtained last winter, and which was kept alive for a few days, was fed on herrings which had been previously extracted from the stomach of a Seal; these it swallowed very rapidly, head foremost. Its powers of digestion seemed to be vigorous; for on examining its stomach after it was killed it was found to be nearly empty, with the exception of cod-hooks, which must have been swallowed some time previously and were considerably worn. Not rarely it becomes so gorged with food as to be unable to rise from the surface of the water, on which it reposes in a lethargic state; and while in this condition it may be easily run down and captured if advanced upon in a boat. It is scarcely necessary to mention that the statement of Pennant and other writers, that the Gannet possesses a gular pouch similar to that of the Pelican, and capable of containing five or six herrings, is entirely without foundation. The old bird, according to Macgillivray, at first feeds its young "with a kind of fish soup prepared in its gullet and stomach, and which it introduces drop by drop, as it were, into its throat. But when its nursling is pretty well grown, it places its bill within its mouth and disgorges the fish either entire or in fragments. They never carry fish to the rock in their bills." The cry of the young bird is a shrill squeak, while that of the old bird is hoarse and resembles the syllables "carra carra" or "kurra kurra" rapidly repeated. From one to two thousand of the young birds are killed annually for sale, and, after being plucked, obtain a price of from sixpence to a shilling each. Formerly, when they were held in greater value, they used to fetch considerably more: thus we find that in Ray's time they cost 1*s.* 8*d.* apiece. At one time they figured at the tables of the Scottish monarchs; and more recently were much esteemed by the citizens of Edinburgh and other towns, being roasted and eaten as a relish before dinner. Now, I believe, their consumption is chiefly limited to the lower classes; and I have been informed on good authority that, after being parboiled and having their legs cut off, they are sold in considerable numbers to the Irish peasants who come over to Scotland at harvest-time.

Ailsa Craig, the breeding-station of the Solan Goose in the Firth of Clyde, consists of a mass of columnar trap of a conical form, rising nearly 1100 feet above the level of the sea. It is about two miles in circumference, and there is only one point where it is possible to land. The north-west side is almost perpendicular, and composed of successive tiers of columns resembling those of Staffa, but on a larger scale; while the other sides are clothed with grass, and gradually slope down to the level of the sea. The Solan Geese build in great numbers on the cliffs, and may be seen fishing in abundance in the neighbourhood.

St. Kilda, the outermost of the Hebrides, measures about three miles long and two broad. Its sides are formed of perpendicular precipices, rising in some parts to a height of 1300 or 1400 feet, and it possesses but one landing-place, situated on the south-east, which can only be reached in very propitious weather. The Solan Geese form one of the principal sources of the sustenance of the inhabitants, who make use of them in a variety of ways—the women, for example, employing their skin in the manufacture of shoes.

In Iceland, according to Faber, the Solan Goose is much more abundant in the south than in the north. It does not appear to breed on the mainland, and its principal stations are those islands which I have already mentioned. It comes to them towards the end of April, and builds a large nest, principally of seaweed, which it often brings from a considerable distance. The egg is deposited about the middle of May, and the young bird is hatched in the beginning of July. As in Britain, the birds leave their breeding-places in October, and spend the winter cruising about the sea-coasts.

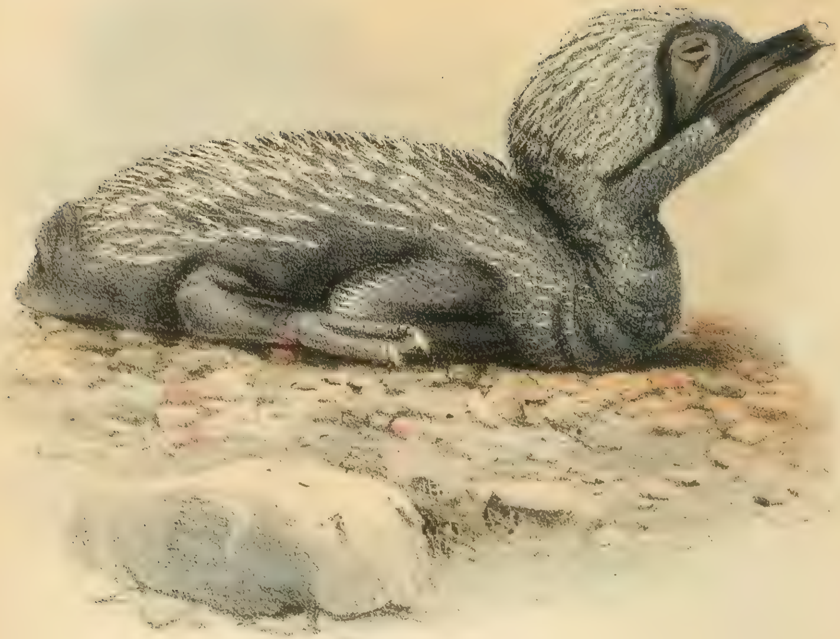
Of the American breeding-stations of the Solan Geese we owe our information principally to Audubon and Dr. Bryant, the latter of whom, in a paper in the 'Proceedings of the Boston Society of Natural History' (viii. p. 65), has given an excellent account of the localities in the Gulf of St. Lawrence. He says, "The northerly or highest half of the summit of Gannet Rock, and all the ledges on its sides of sufficient width, the whole upper part of the pillar-like portion of the Little Bird, and the greater part of the remaining portion of this rock, were covered with the nests of the Gannet at the time of my visit. On the ledges the nests were arranged in single lines, nearly or quite touching one another; on the summit, at regular distances one from the other of about three feet. Those on the ledges were built entirely of seaweed and other floating substances; on the summit of the rock they were raised on cones, formed of earth or small stones, about ten inches in height and eighteen in diameter when first constructed, presenting, at a short distance, the appearance of a well-hilled potato-field. I saw no nests built of zostera, or grass, or sods; the materials were almost entirely fuci, though anything available was probably used; in one case the whole nest was composed of straw, and in another, the greater part of manila rope-yarn. The nests on the summit of the Great Bird were never scattered, but ended abruptly in as regular a line as a military encampment. Through the midst of the nests were several open spaces, like lanes, made quite smooth by the continued trampling of the birds, which seemed to be used for play-grounds; these generally extended to the brink of the precipice, and reminded me very much of the sliding-places of otters.

"The birds were principally feeding on herring, but also on capelin filled with spawn, some fine-looking mackerel, a few squids, and, in one instance, a codfish weighing at least two pounds. The surface was swarming with a species of staphylinus, that subsisted on the fish dropped by the birds. Occasionally a nest could be seen in which the single egg had not been deposited, and perhaps one, in two or three hundred, with a newly laid one; on all the rest the Gannets were already sitting, and though none of the eggs were as yet hatched, many of them contained fully formed chicks. On being approached the birds manifested but slight symptoms of fear, and could hardly be driven from their nests; occasionally one more bold would actually attack us. Their number on the summit could be very easily and accurately determined by measuring the surface occupied by them; by a rough computation I made it to be about fifty thousand pairs, and probably half as many more breed on the remaining portion of the rock and on the Little Bird."

Like most other birds, the Gannet is preyed upon by various parasitic insects of the order *Anoplura.* In the specimens which I have examined I found two distinct species in great numbers on the feathers of the fully fledged birds, and even on the naked skin of recently hatched individuals; and these on examination were found to be referable to the *Decophorus bassanæ* and *Lipensus staphylinoides* of Denny. Montagu describes a parasite from the cellular membrane of the skin under the name *Cellularia bassani*; but, though I have looked for it with care, I have not succeeded in meeting with it.

It would appear that the Gannet is a very long-lived species, as Mr. Selby was informed by the keeper of the Bass that he had recognized, from particular and well-known marks, certain individuals for upwards of forty years that invariably returned to the same spot to breed. It is likewise long in arriving at a state of maturity. Selby fixes the time as four years; but I was informed by the present tenant of the Bass that it is five, and, from the varieties in plumage which different individuals present, I can readily believe it. There has been some discussion as to whether the Solan Goose does or does not possess external nostrils; but, from a careful examination of specimens in every stage of growth, I have satisfied myself that they are never present at any period of its existence.

The young bird when first hatched is naked, and of a greyish slate-colour, which varies in intensity in different parts of the body. The space round the eye and the skin over the oil-gland are yellowish white; the bill is horn-coloured at the tip, and the upper mandible is provided with a scale, which soon disappears. The down begins to make its appearance very rapidly, but is at first confined to the upper parts. This stage of the nestling's



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SULA BASSANA [illegible]

existence is represented in the accompanying figure (Plate I.), copied from a drawing of a living bird made by myself last summer. But the whole body soon becomes covered with a snow-white garment, over which the true plumage gradually extends, and in the course of between two and three months it is able to fly. For a considerable time after this period, however, small detached masses of down may be seen protruding through the feathers, more especially those of the head and neck. The plumage from this stage on to maturity is so well known that I need not occupy more valuable space in the description of it, and I therefore bring these remarks to a close.

II.—*Notes on the Birds of Southern Texas.*

By H. E. Dresser.

[Concluded from 'The Ibis' for 1865, page 495.]

Columba flavirostris, Wagler. Red-billed Dove.

Common near Matamoras, breeding there. During the autumn, quantities of these birds, the two next species, and *Ortalida maccalli* are brought to the market for sale. One I picked out of such a lot, on the 9th August, 1864, agrees with McCall's description of *Columba solitaria*, excepting that the neck and breast have reddish, instead of bluish metallic reflexions. I examined many at the market, but could find none differing from my specimen, except in size, and none answering more nearly to that description. At Brownsville this bird is not uncommon, but is found only a short distance towards the interior of Texas, and I noticed none higher up the Rio Grande than Roma.

A Mexican who shot Doves for the market told me that he had found this species breeding near the town of Matamoras, and that it builds a nest somewhat similar to that of *Zenaidura carolinensis*, and lays two eggs somewhat larger than those of that bird.

Bill coral-red at base and for rather more than two-thirds of its length, the tip being whitish; iris bright orange; the bare space round the eye and legs coral-red. Stomach containing a sort of blueberry. Length 13 inches; expanse of wings 23 inches.

MELOPELIA LEUCOPTERA (Linnæus). White-winged Dove.

Very common near Matamoras, Brownsville, and as far in Texas as the Sal Colorado, after which it becomes rare, and I never saw one further north or east than the Rio Nueces. It is not uncommon at Eagle Pass, where I saw many in cages at the huts of the Mexicans.

Male. Bill purplish-black; iris bright orange; the bare space round the eye bright powder-blue; legs coral-red, with a tinge of lake. Stomach containing maize and caterpillars.

ZENAIDURA CAROLINENSIS (Linnæus). Carolina Dove.

Common and resident in every part of Mexico and Texas that I visited. I found many nests of this bird near San Antonio in June, all very slightly built of sticks, placed on the branch of a mezquite tree or bush, and containing two pure white eggs. I have, however, in two instances seen nests on the ground. I have also found this bird breeding very late in the year; indeed I saw a nest containing two fresh eggs, in a mezquite tree near Barton's Rancho, between San Antonio and Brownsville, on the 7th of September, 1863.

CHAMÆPELIA PASSERINA (Linnæus). Ground-Dove.

During my stay at Matamoras I found this bird rather common, and generally noticed them on the road between Matamoras and Brownsville, as well as on a sand-plain close to Fort Brown, on the Texan side of the river. In the interior of Texas I never observed any, except in April 1864, when I saw one close to the Medina River, near San Antonio.

Male (shot 11th July, 1863). Beak purplish-black; iris bright red; legs flesh-coloured. Stomach containing small seeds.

ORTALIDA MACCALLI, Baird. Chiacalacca.

This bird is very common near Matamoras and Brownsville; and in the autumn great numbers are exposed in the market for sale at the former place. The Mexicans hold the Chiacalacca in high esteem for its fighting-qualities, and often keep it in a domesticated state, and, crossing it, it is said, with the common fowl, use the mule birds for cock-fighting; indeed by many they are considered far superior to the pure-bred game-cocks*.

[*] This statement I am aware will scarcely be received without hesita-

I have seen one fight at the Matamoras cockpit; and it certainly showed as much pluck as the ordinary cocks, and, at the same time, was far more sprightly and quick in its movements. I was unable to procure a specimen of the hybrid; in fact I only saw it on one occasion, in the public cockpit.

I kept a tame Chiacalacca at Matamoras; but, like my Paisano, he got too familiar, for I could not keep him out of the room. He would often go away for a day and pay a visit to the poultry belonging to a neighbour; and I once lost him for four days, eventually finding him in the possession of some Mexicans, who refused to give him up; but I took him forcibly away from the man who held him, and, finding that I intended to have my own way, they let me go off with him unmolested. He was eventually lost during my absence, in the confusion when Cortinas took Matamoras—which was vexing, as I intended to have sent him to England by some steamer going direct to Liverpool. On my return to Matamoras—late in July 1864, it was too late to obtain the eggs of this bird, as early in August I saw young birds exposed in the market for sale.

The habits of my bird were very similar to those of the common Fowl; and whenever I missed him I had only to go to a poultry-yard near our house, and generally found him there.

MELEAGRIS GALLOPAVO, Linnæus. Wild Turkey.

Common in all parts of Texas and Mexico that I visited, particu-

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tion, but I must say that I have a good deal of faith in the information I got. Not merely one or two, but many Mexicans, on whose word I think I can place some reliance, assured me of the truth of what I have above said. I made many inquiries respecting these hybrids, and was told that the cross is always between the male *Ortalida* and the female of the Common Fowl. The only example I saw seemed a bird very likely to have had such an origin. *O. maccalli* in its habits bears a much closer resemblance to our domestic poultry than its appearance would at first lead one to suppose. I blame myself very much for not having got at the bottom of this interesting question; but during my short stay at Matamoras I was so very much engaged with business, that I put off doing so to a future opportunity; and when I returned thither it was only *en route* homeward. My own tame bird, mentioned in the text, consorted frequently with the poultry, and though young I have seen him making amorous advances to the hens.

larly so on the rivers between San Antonio and the Rio Grande. My first Turkey-hunt was on the Upper Medina river, about forty miles from San Antonio; and I was fortunate enough to kill a couple of gobblers with the first two shots I fired, which was more than I expected, as I must confess that on first seeing them I felt a sensation something akin to what the Americans call "buck-ague." Since that I have killed many Turkeys in Texas, both for sport and the pot. The most I ever killed in one day was nine, all of which I shot from the roost one evening.

They are very wary and difficult to approach during the daytime; but by watching to see where they roost, and paying them a visit there by moonlight, one can be pretty sure of bagging one or two. They generally prefer roosting in high cottonwood trees on the banks of a stream, and perch as high up as possible. I once counted eleven on one large bough of a cottonwood tree on the Medina. When the pecan-nuts are ripe, the Turkeys become very fat, as they are extremely fond of these nuts, which are oily. I shot an unusually fat bird in November 1863; and taking it to San Antonio to have it weighed, I found it, without its entrails (for I had drawn them in order to keep it as fresh as possible), to weigh nearly sixteen pounds.

I never succeeded in finding a Turkey's nest, but was told by hunters who had done so that the birds scratch a hole in the ground, or make a sort of nest in the grass under a bush, and that the eggs resemble those of the tame Turkey, but are rather smaller and more elongated in form. The Mexicans on the Upper Rio Grande sometimes have the Wild Turkey domesticated; and at Piedras Negras I saw two which had been caught when quite young and had become very tame. The female was then sitting, and I had an opportunity of examining the eggs, which I found to agree with the description of those found by the hunters.

Cupidonia cupido (Linnæus). Pinnated Grouse, or Prairie-chicken.

In travelling from Brownsville to Victoria, after leaving the chapparral and entering the prairie-country, I found this bird very common; and throughout the whole of the prairie-country of Texas it was abundant.

Ortyx texanus, Lawrence. Texan Quail.

This, the so-called "Common Partridge" of the country, I found abundant everywhere in localities suitable to its habits. Near Matamoras it is common, and is the only species of Quail I shot or noticed there. Near Roma, Rio Grande City, and Laredo I saw none, but found the Blue Quail abundant. At Eagle Pass and Piedras Negras, where the soil is sandy, the grass scanty, and cacti are abundant, I only found one bevy of Texan Quail, but saw plenty of Blue Quail. Near San Antonio only the Texan Quail is found; nor did I observe any other species in travelling towards the north-east. Amongst the Bandera Hills, where I found the Massena Quail, I also found the Texan Quail in the valleys and near the maize-fields. In travelling from Brownsville to San Antonio the Texan Quail was abundant, except in the sand deserts.

The present species does not seem to be very particular as to its breeding-season, as I found young birds near Matamoras early in July, and in September also quite young birds near the Nueces River; and Dr. Heermann tells me that he has procured eggs at San Antonio late in the same month. I have one nest of eggs, taken near San Antonio, which are very similar to those of the Virginian Quail (*O. virginianus*), but are slightly smaller.

I procured some peculiar varieties of this Quail near San Antonio, with the throat black, surrounded by white, instead of being pure white, so that the white forms a narrow crescent pointing upwards, the black commencing from the bill. Some had the black patch very dark and clearly defined; and others had the black extending a very short distance below the bill, and mixed with white spots. These varieties are not found by themselves, but in the same bevies with birds of the usual type.

Oreortyx pictus (Douglas)? Mountain-Quail?

Westfall the hunter described to me a Quail which he had shot in the hills near the head-springs of the Leona, which I feel pretty sure must have been this bird.

Lophortyx californicus (Shaw)? California Quail?

Some Californians (who were with Captain Skillman on his expedition from San Antonio to El Paso to watch the movements of the troops stationed there) told me that they had shot some California Quail near Devil's River. They might, however, have been Gambel's Quail, which certainly is found there.

Lophortyx gambeli (Nuttall). Gambel's Quail.

Not a common bird in Texas, and found only in certain localities. At Muddy Creek, near Fort Clarke, they are not uncommon, and are also found near the Nueces River.

Callipepla squamata (Vigors). Blue Quail.

On the Rio Grande above Roma, and between the Rio Grande and the Rio Nueces, this Quail is abundant, and where it is found seems to have the country to itself, to the exclusion of the other species. I found them most difficult to shoot; for when a bevy was disturbed the birds would scatter themselves, and, running with outstretched necks and erected crests, would dodge through the bushes like rabbits, so as soon to be out of reach. I have seen a bevy of ten to fifteen so completely disappear that I could not find a single one of them. If left undisturbed they commence their call-note (which is not unlike the chirp of a chicken), and soon reunite.

At first I could not bring myself to fire at them on the ground, but, finding it impossible to get them to rise, I soon gave up fair play, and must plead guilty to several shots into bevies when, unmindful of danger, they were collected under a cactus or a bush. Near the small villages in Mexico I have found them very tame; and at Prosilio, on the Rio Grande, I noticed them in a corral, feeding with some poultry. I have never seen their eggs, but am told by the Mexicans that they are dull white, with minute reddish spots at the larger end.

Professor Baird, in his work on the 'Birds of North America,' speaks (page 647) of a specimen of this species from New Leon having "a large brownish chestnut spot on the middle of the belly," and thus differing from other skins. In all adult males I shot, both in Texas and Mexico, I noticed this chestnut patch, and sometimes to a slight extent in the females also.

Male. Bill blackish; legs bluish-grey; iris dark brown. Stomach containing small mezquite beans.

Cyrtonyx massena (Lesson). Massena Quail, or Black Partridge.

I had often heard of the "Black Partridge," and had sought for it near San Antonio, but without success. In November, when in the Bandera Hills, I kept a sharp look out for it, having been told by a Mexican herdsman that I should probably find it there, and I was at last successful in my search. One evening when returning to camp I noticed some Quail which seemed unlike Texan Quail, flying down the hillside and dropping into a bunch of high weeds. Suspecting them to be Black Partridges, I would not then disturb them, as they had evidently taken up their quarters for the night; but I was there the following morning before daybreak, and so soon as it was light enough to see to shoot I walked through the weeds and trod them up, getting a double shot at them and knocking down a couple, which to my delight I found to be the real Massena Quail. I tried to mark the rest down, but could not do so; and, for all I know to the contrary, they may be going yet, for I watched them as far as I could with my glass, and they were still on the wing. I afterwards found the bird on several occasions when riding along the higher hill-ranges, and altogether shot six, while a man who was with me killed two more. In their habits they are more like the Texan Quail than any other, but on the wing are easily distinguished, for they fly heavily though very swiftly. When disturbed, they squat very close, and will not move until one is close upon them; indeed I found them generally rise up almost under my feet. A ranchero living in the Bandera Hills promised to procure the eggs for me, as they breed near his rancho; but I was unable to go there in the spring to remind him, and of course he never sent them. He described them as being white, and larger than those of the Texan Quail. I never found this species in any other part of Texas, except Bandera county, but I was told that it is abundant in the hilly country at the head of the Leona, and is also found near Laredo.

Adult male. Upper mandible dark horn-blue, light blue at base; under mandible light blue; iris reddish-brown; legs light milk-blue.

Young male. Upper mandible dull bluish-brown, light at base; under mandible dull light blue; iris reddish-brown; legs dull light bluish.

Adult female. Upper mandible dark brownish-horn; under mandible light brown; legs light brownish-blue; iris reddish-brown.

Grus americana (Linnæus). Whooping Crane.

On my first visit to the town lagoon at Matamoras, in June 1863, I saw a couple of this Crane, and subsequently saw a small flock of seven or eight; but they were so wary that I only succeeded in shooting two, one of which fell into the Rio Grande and was lost. I inquired of the Mexicans as to where they bred, and was told that their eggs could be procured at a lagoon some distance to the south-west of Bagdad (Boca del Rio Grande); but, partly owing to the want of leisure, and partly to the unsettled and dangerous state of the country, I was unable to go there. On my return to Matamoras in 1864 I saw none at the lagoons near there, and therefore have no specimen in my collection.

During my rambles in Texas I only saw this bird on two or three occasions near San Antonio, and once at Point Isabel; but I was told that it is occasionally seen on Galveston Island, and at the mouth of the Brazos River.

Grus canadensis (Linnæus). Sandhill-Crane.

Near Matamoras I never saw the Sandhill-Crane; but on our journey from Brownsville to San Antonio, in September 1863, we saw birds of this species every day. During the winter they were abundant near San Antonio, but disappeared towards the spring. I shot several for the pot, and found them excellent eating, indeed almost equal in that respect to Wild Turkeys. I was told that they breed near Galveston and in Matagordo Bay; and one was sent to me from Fort Stockton by Colonel M'Cormick.

Grus fraterculus, Cassin. Little Crane.

I noticed the Little Crane several times near San Antonio, and once near the Rio Nueces, and do not think it is of uncommon occurrence in Southern Texas. I have one single specimen, shot near San Antonio and skinned for me by Dr. Heermann. This was the only one I could procure, as the bird is very wary and difficult to approach.

Demiegretta pealii (Bonaparte). Peale's Egret.

[Not uncommon near San Antonio and in Eastern Texas during the summer months.—A. L. H.]

Demiegretta rufa (Boddaert). Reddish Egret.

[The same remark is applicable to this as to the preceding species.—A. L. H.]

Demiegretta ludoviciana (Wilson). Louisiana Heron.

Common at Matamoras and also near San Antonio. I received one from Fort Stockton shot during the summer. At San Antonio I have shot them so late in the season that I think it not improbable that some few may remain there over the winter. In June 1864 I found numbers breeding on Galveston Island, building heavy nests on the ground or in the low bushes, and laying four light blue eggs.

Garzetta candidissima (Gmelin). Snowy Heron.

In August 1863 large flocks of Snowy Herons visited the lagoons near Matamoras; indeed so numerous were they that I on one occasion killed thirteen at one discharge. Near San Antonio I noticed one or two in the spring of 1864, and found a few breeding on Galveston Island in June. One was sent me from Fort Stockton.

Herodias egretta (Gmelin). White Heron.

I noticed a few near Matamoras in August, and during my stay at San Antonio shot three on different occasions. At Galveston I saw several in June; and I received one from Fort Stockton.

Ardea herodias, Linnæus. Great Blue Heron.

Common throughout the whole year except during the two coldest months, when I never noticed any.

Florida cærulea (Linnæus). Blue Heron.

Very common near Matamoras during the summer, not frequenting the lagoon, but generally found on the Rio Grande, either close under the banks or perched on some old log in the stream. I noticed one or two near San Antonio, and also on the Brazos and Colorado Rivers.

Ardetta exilis (Gmelin). Least Bittern.

In July and August I noticed two at the lagoon at Matamoras. They are occasionally seen near San Antonio.

Botaurus lentiginosus (Montagu). American Bittern.

Common and resident.

Butorides virescens (Linnæus). Green Heron.

Common, breeding on all the larger rivers.

Nyctiardea gardeni (Gmelin). American Night-Heron.

Of rather common occurrence in all the parts of Texas I visited.

Nyctherodius violaceus (Linnæus). Yellow-crowned Heron.

Commoner than the last species. At Matamoras I noticed none before the end of August.

Tantalus loculator, Linnæus. Wood-Ibis.

Not of uncommon occurrence near San Antonio; and I am told by planters living on the Brazos and Colorado Rivers that it breeds there.

Ibis rubra (Linnæus). Scarlet Ibis.

I have been assured by friends living at Matamoras that the Scarlet Ibis is found there and at a lagoon near Brownsville during the winter. I remained at San Antonio at that season, and thus had no opportunity of judging for myself; but the Scarlet Ibis is a bird that is not easily confounded with any other, and I therefore include it in this list.

Ibis alba (Linnæus). White Ibis.

Abundant at Matamoras in August, frequenting the town lagoon, where I have on several occasions shot four or five before breakfast. I always ate them, and found them excellent—indeed, far superior to the Curlew.

Ibis ordi (Bonaparte). North-American Glossy Ibis.

This Ibis was very numerous at the lagoons near Matamoras in the month of August, appearing somewhat earlier than the White Ibis.

I prepared some choice specimens of both these birds, which, however, were destroyed during my absence in Texas; and one was sent to me from Fort Stockton in a collection formed by Mr. P. Duffy.

PLATALEA AJAJA, Linnæus. Roseate Spoonbill.

Abundant near Matamoras during the summer, and I never visited the lagoon without seeing several. On our journey to San Antonio in September we saw several at different places near the coast; and in June 1864 I saw two or three on Galveston Island, where it is known under the name of "Flamingo." I was told that it had bred on the island in former years, but it does not do so now, being too much disturbed. I received one in the collection from Fort Stockton, where it was obtained on the 3rd of August.

CHARADRIUS VIRGINICUS, Borkhausen. American Golden Plover.

Not uncommon near San Antonio in the autumn; but I saw none in the spring.

ÆGIALITES VOCIFERUS (Linnæus). Killdeer Plover.

Common, not only on the sea-coast, but also inland at almost every pool. I have been often startled when watering my horse at some deserted-looking pool in a half-dried-up river-bed by the Killdeer's cry close to me; for they will often squat until one is close upon them, and then run or fly off uttering their loud cry. They breed on the coast, and also inland, as I had eggs from Systerdale, taken late in May. When on Galveston Island on the 26th of May, a German, who was with me, found a young Killdeer in a depression in the ground made by a horse's hoof; we did not, however, disturb it, as the old bird came flying round exhibiting the greatest anxiety on its behalf

Male. Bill blackish; legs greenish-grey; iris dark brown.

ÆGIALITES MONTANUS (Townsend). Mountain-Plover.

In December 1863, when riding about the open prairie-country near San Antonio, I noticed a few Mountain-Plovers, finding them generally near the highroads. In their habits they reminded me of the European Ring-Plover (*Æ. hiaticula*), running very swiftly, with the head drawn in close to the body. As the winter advanced they became more plentiful, but disappeared in the early spring, none showing themselves later than the commencement of April. They feed on cattle-ticks and beetles of all sorts; and seem to prefer the barren sand-plains to the grassy parts in the neighbourhood of water.

Beak black; legs greenish-grey; iris black.

ÆGIALITES WILSONIUS (Ord). Wilson's Plover.

Common about the coast, so far as my own experience goes, during the summer season. On Galveston Island I noticed many during my stay there in May and June, and shot two or three, but could not succeed in finding any eggs.

ÆGIALITES SEMIPALMATUS, Bonaparte. Semipalmated Plover.

Pretty common about the pond-holes near San Antonio in the autumn and spring, but I noticed none near Matamoras when there.

SQUATAROLA HELVETICA (Linnæus). Grey Plover.

On the 6th of September, 1863, at the salt-ponds in the sandy desert between the Sal Colorado and King's Rancho, I shot one specimen (which was well marked with black), and killed another on Galveston Island on the 26th of May, 1864; but I skinned neither of them.

HÆMATOPUS PALLIATUS, Temminck. American Oystercatcher.

When out boating in Galveston Bay in June I saw a couple of Oystercatchers, and pointed them out to the boatman, who called them "Pillwillets," but said that he knew the difference between them and the real Willet (*Symphemia semipalmata*). He also said that the Oystercatcher is not a common bird, but that one or two pair bred sometimes on the outer islands in West Bay.

STREPSILAS INTERPRES (Linnæus). Turnstone.

I found several birds of this species quite close to the town of Galveston on the 26th of May, 1864; and on the beach to the westward there was a good number of them. On my second visit to Galveston, in June, I saw a few, but not so many as on the above-mentioned occasion.

RECURVIROSTRA AMERICANA, Gmelin. American Avocet.

Early in July I often saw Avocets at the town-lagoon at Matamoras, generally finding them in families of five or six, some of the young birds being only just able to fly. They were not shy, but would come to a shallow part of the lagoon close to the houses and wade along, moving their heads from side to side with perfect regularity, reminding one forcibly of a party of mowers, as they do not go in an even line, but, like mowers, one slightly behind and to the side of the other. Towards August they became much more abundant, and I rarely went to the lagoon without observing a dozen or fifteen. In May and June 1864 I saw several pair on Galveston Island, but found no nest. I was, however, told by the fishermen that both the Avocet and Stilt breed on Bolivar Point, and on the islands outside the Brazos and St. Louis Pass. I also received a specimen from Fort Stockton.

HIMANTOPUS NIGRICOLLIS, Vieillot. Black-necked Stilt.

Early in July I occasionally saw one or two Stilts near Matamoras, but did not notice many before the commencement or middle of August, when I never went to the lagoon without finding one or two flocks. They are very shy, and when disturbed fly round with loud cries, scaring everything else away. I generally shot them by hiding in the bushes near the lagoon and getting some one to walk round and frighten them off; I could then be almost certain of a shot as they passed overhead, for they always flew off towards the river. On the 2nd of June, 1864, I saw two pair on Galveston Island; and on the 4th of July, after a heavy fall of rain, they were to be found all over the flooded lands near San Antonio.

PHALAROPUS WILSONI, Sabine. Wilson's Phalarope.

In September, when travelling from Brownsville towards San Antonio, I saw on the pond at Barton's Rancho a Phalarope which, I believe, was of this species, but I was unable to shoot it. On the 4th of July, 1864, I noticed a pair on some flooded lands near San Antonio, both of which I succeeded in shooting.

Bill and legs dark olive-brown; iris dark brown.

GALLINAGO WILSONI (Temminck). Wilson's Snipe.

I found Snipe very common near San Antonio during the winter, and had some capital sport, the more so as, nearly every one being absent with the army, I had the shooting almost to myself. I shot the last one on the 20th of April, not having seen any during the previous week.

MACRORHAMPHUS GRISEUS (Gmelin). Brown Snipe.

On the 29th of June, 1863, I first noticed a few birds of this species at the lagoon near Matamoras; and from that time onwards they continued to arrive, some migrating further south, but a considerable number remained in that neighbourhood. I shot them both in the red and grey plumage; and so numerous were they in July and August that I shot twenty-five one morning before breakfast. They go in flocks of from ten to thirty, and struck me as being more of the Sandpiper than the Snipe in their habits, as I invariably found them on the shores of the lagoons, often in company with Sandpipers, and never in the same localities as *Gallinago wilsoni.* I generally found the Stilt-Sandpiper (*Micropalama himantopus*) in company with this species at the Matamoras lagoon.

I only observed the Brown Snipe on one occasion near San Antonio; and that was after a heavy fall of rain, in July 1864, when I saw several at a pond.

Bill blackish-brown; legs light greenish-brown; iris dark brown.

TRINGA MACULATA, Vieillot. Pectoral Sandpiper.

A few Pectoral Sandpipers appeared near Matamoras in July 1863, not frequenting the lagoons, but oftener found on the banks of the Rio Grande or at small pools after rain. In April 1864 I observed several small flocks of four or five at the waterholes near San Antonio, and in May shot three at Howard's Rancho on the Medina River.

Male (2nd May, 1864). Bill greenish-black, olive-green at base; legs clay-yellow; iris dark brown; testes much developed.

TRINGA WILSONI, Nuttall. Least Sandpiper.

Very common at Matamoras in the autumn, arriving there late in July. In the early spring also I shot several near San Antonio.

Bill brownish-black; legs light yellowish-brown; iris dark brown.

EREUNETES PETRIFICATUS, Illiger. Semipalmated Sandpiper.

Not uncommon near Matamoras, but by no means so numerous as the last-named species. I never saw any at San Antonio.

Bill black; legs dark olive-brown; iris dark. Stomach containing small worms.

MICROPALAMA HIMANTOPUS (Bonaparte). Stilt-Sandpiper.

When out shooting at the lagoon, soon after my arrival at Matamoras, I shot a Sandpiper that was quite new to me; and having no work on ornithology to which I could refer, I noted down a careful description in my pocket-book. Subsequently, on comparing it with Mr. Cassin's account in Baird's 'Birds of North America' (which book I procured at San Antonio), I found it to be the species named above. During my stay at Matamoras I shot several more Stilt-Sandpipers, meeting with them far oftener (as the different kinds of birds of this family began to arrive from the north), and generally finding them in company with *Macrorhamphus griseus.* I skinned several, all of which, on my return to Matamoras in 1864, I found so damaged that I had to throw them away. When out Snipe-shooting on the 20th November, 1863, near San Antonio, I shot one of these birds, and saw another, which, however, I did not succeed in killing. The one I shot I preserved and now have, having compared it with the miserable remains of those I had left at Matamoras before I threw them away.

Bill dark greenish-black; legs dark greyish; iris dark brown.

SYMPHEMIA SEMIPALMATA (Gmelin). Willet.

Not uncommon near San Antonio during the summer. I shot specimens at the Boca Grande in July and August, and between Matamoras and Victoria (at King's Rancho) in September, but never saw any near San Antonio. I saw several in June on Galveston Island, but shot none. One was sent to me from Fort Stockton.

Gambetta melanoleuca (Gmelin). Telltale.

Common near San Antonio during the winter season, until the month of April, after which I saw none, but found several on Galveston Island in June.

Gambetta flavipes (Gmelin). Yellowshank.

At Matamoras the Yellowshanks were not common, and I only shot one during the two months I was there. In the spring of 1864 (at San Antonio) I noticed them oftener than I did at Matamoras, and shot several during April and early in May. Early in June I saw several on Galveston Island.

Rhyacophilus solitarius (Wilson). Solitary Sandpiper.

About the middle of August I noticed two Solitary Sandpipers on a sandbank in the Rio Grande near Matamoras, and succeeded in shooting one, this being the only time I saw any in that neighbourhood. During the month of April 1864 I often found them at the small pools and on the banks of the small streams near San Antonio, and shot several.

Male. Bill brownish-black; lower mandible dark green at the base; legs dull green; iris dark brown.

Tringoides macularius (Linn.). Spotted Sandpiper.

I shot one specimen in immature plumage near Matamoras in August 1863, and found the species abundant near San Antonio in September and October.

Actiturus bartramius (Wilson). Bartram's Sandpiper, or Grass-Plover.

On our journey from Brownsville to San Antonio in September 1863 we found, on quitting the sandy regions and entering into the grass-country, the Grass-Plovers very abundant. They do not go in flocks, but are scattered singly all over the country. In their habits they are shy and most difficult to approach, if one is on foot; but by riding or driving near them, I found I could always get within shot before they took to flight. When undisturbed they run about very swiftly, catching insects amongst the grass, and they often reminded me of our Stone-Curlew (*Œdicnemus crepitans*). When disturbed they will squat close for a time, and then, if one walks towards them, they will rise suddenly and fly off uttering a clear whistle.

In New Orleans, where this bird is known under the name of "Papabot," it is much sought after by epicures; and I for one quite agree with them in so doing, for I never tasted a better bird. Indeed we ate them three times a day, whenever we could procure them, and would touch nothing else. Our mode of cooking them was to pluck and draw them, then split them up the back and fry them in their own fat, adding a little pepper and salt; and in such good condition were they, that the melted fat would almost cover them in the pan, and the process nearly became one of boiling instead of frying. In some cases I have seen them so fat that they actually burst on falling to the ground.

During the winter I observed none; but in April and May 1864 I noticed a few near San Antonio; they were, however, so shy that I only shot one.

Upper mandible dark greenish-black; lower mandible yellow; legs pale ochre; iris brown. Stomach containing snails.

TRYNGITES RUFESCENS (Vieillot). Buff-breasted Sandpiper.

Late in August, on visiting the lagoon near Matamoras early one morning, I found a small flock of Sandpipers near to me, on a little grassy place a short distance from the water, and, on shooting several, found them to be Buffbreasts. On visiting the same place the following day I found more there, and altogether shot about a dozen, most of which I skinned.

On our way towards San Antonio in September we found these birds pretty common throughout the whole journey, and I often shot them for the pot, finding them excellent eating.

They are not shy, and generally go in flocks of from five to twelve, not resorting to the pools, but living on the small insects found amongst the coarse herbage which often grows some distance from water. Near Victoria they were very abundant; but after leaving that town I only saw a few. At San Antonio I saw none; but Dr. Heermann told me that they are often found there in the spring and autumn.

Male. Bill greenish-black; legs clay-yellow; iris dark hazel. Stomach containing small insects.

LIMOSA FEDOA (Linn.). Marbled Godwit.

In June I noticed a few Godwits near Brownsville and Matamoras, but only shot one. In August they became more numerous, and about the time I left I saw them daily at the lagoon.

NUMENIUS LONGIROSTRIS, Wilson. Long-billed Curlew.

Not uncommon near Matamoras late in July and early in August. In September we found them very abundant between Brownsville and Victoria, and more particularly so on the sand-plains and at the saltwater ponds near Barton's Rancho, at which latter place I killed five at one shot.

During my visit to Galveston Island in May and June 1864 I saw many there, and was told by several gunners that a few breed at the lake in the middle of the island. At San Antonio I saw and shot them during the winter months; and three specimens were included in the collection from Fort Stockton.

Bill dark brown; legs greenish-grey; iris brown.

NUMENIUS HUDSONICUS, Latham. Hudsonian Curlew.

Found occasionally in the autumn and spring. I have two specimens shot near San Antonio.

NUMENIUS BOREALIS (Forster). Esquimaux Curlew.

Found near San Antonio in the spring. It is commoner than the preceding species, but not so common as *Numenius longirostris*.

RALLUS ELEGANS, Audubon. Marsh-hen.

Pretty common on the Brazos and Colorado Rivers, and also found occasionally on Galveston Island.

RALLUS VIRGINIANUS, Linnæus. Virginia Rail.

[Shot near San Antonio on several occasions.—A. L. H.]

I shot a couple of these Rails at Matamoras in August 1863.

PORZANA CAROLINA (Linnæus). Carolina Rail.

Not uncommon near San Antonio in October and December.

PORZANA NOVEBORACENSIS (Gmelin). Yellow Rail.

[Not uncommon at Mitchell's Lake, near San Antonio.—A. L. H.]

When I visited this locality it was nearly dried up, and I found no Yellow Rails there; but all the gunners who resort thither assure me that in some seasons they are very numerous.

FULICA AMERICANA, Gmelin. American Coot.

Very numerous near Matamoras and Brownsville during the time I was there. Near San Antonio also I shot several late in the autumn of 1863.

GALLINULA MARTINICA (Linnæus). Martinico Gallinule.

Dr. Heermann had the skin of one, shot near San Antonio. It is said to be rather common than otherwise on the Brazos and Colorado Rivers.

The following notes on the *Natatores* will, I fear, be found very meagre; but I had so little chance of observing the birds belonging to this Order, that I must offer that as my excuse. I spent my winter far in the interior; and even during the summer my visits to the coast were few and far between, consisting only of two trips from Matamoras to the Boca del Rio Grande in July and August 1863, and of two visits to Galveston Island in May and June 1864, spending altogether a week at the latter place.

I would gladly have passed a portion of the winter at Matamoras; for, if half the tales about the vast quantities of sea-fowl found during the winter at the Boca Grande are true, it must be difficult to find a more suitable place to collect wild-fowl; but I was compelled to remain inland during the whole winter. However, as it was, I took every opportunity of examining the waterfowl that were brought into San Antonio during the winter, and spent what time I could spare in shooting at Mitchell's Pond—a small lake not far from San Antonio, and a great place of resort for waterfowl during the winter.

CYGNUS, sp.?

Swans are not uncommon near Brownsville during the winter; and a friend who remained there during the winter shot one, and gave me the skin of its breast, thinking I wanted it for the sake of the down. I am, of course, unable to say whether the species was *C. americanus* or *C. buccinator*.

?ANSER HYPERBOREUS, Pallas. Snow-Goose.

In November I saw several large flocks of what I believe to have been this species at Mitchell's Pond. It is said to be very common during the winter on the coast.

Anser gambeli, Hartlaub. American White-fronted Goose.

I shot several at Mitchell's Pond during the winter.

Bernicla canadensis (Linnæus). Canada Goose.

Common near San Antonio during the winter. The shore gunners are well aware of the difference between this and *Bernicla hutchinsi,* calling the former the "Bay-Goose," and the latter the "Prairie-Goose." I have seen great numbers of Geese on the prairies when travelling, and on one occasion they showed so little fear, or were so wearied, that I rode near enough to shoot one with my pistol before they flew.

Bernicla hutchinsi (Richardson). Hutchins's Goose.

Common both on the coast and inland.

I shot several at Mitchell's Pond during the winter.

Bernicla brenta, Stephens. Brent-Goose.

Common on the coast during the winter.

Dendrocygna autumnalis (Linnæus). Long-legged Duck.

Found occasionally near Matamoras during the summer, and breeds not far from Monterey (as I am assured by a man living at that place who knows the bird well). At Galveston a German gunner told me that this bird is common during the winter, arriving in November and departing in March.

Dendrocygna fulva (Gmelin). Rufous Long-legged Duck.

Observed occasionally near Brownsville. In June I found it in abundance on Galveston Island. A German, whom I saw carrying one, told me that birds of this species were found there, and first took me to their chief place of resort, a lake in the middle of the island. He told me also that they breed there, but very late in the season, not having even then (1st June) commenced.

Male. Bill bluish-black; legs very dark lead-blue; iris dark.

Anas boschas, Linnæus. Mallard.

Abundant during the winter, frequenting the inland streams and ponds.

Anas obscura, Gmelin. Dusky Duck.

I have one specimen, shot by Dr. Heermann near San Antonio in the month of December.

Dafila acuta (Linnæus). Pintail.

Common during the winter.

Nettion carolinensis (Gmelin). Green-winged Teal.

Not common during the winter.

Querquedula discors (Linnæus). Blue-winged Teal.

Common throughout the country.

[Breeds here on the Attascosa, as I have observed it in June. —A. L. H.]

Chaulelasmus streperus (Linnæus). Gadwall.

Not uncommon near Eagle Pass during the winter, and on the ponds and streams between that place and San Antonio.

On the 2nd June I shot one on Galveston Island.

Mareca americana (Gmelin). American Wigeon.

Common near the coast throughout the winter.

Aix sponsa (Linnæus). Summer-Duck.

Not uncommon near San Antonio during the summer. I shot a fine male on the San Pedro, 23rd April, 1864; and a female, killed on the 19th October, was sent to me from Fort Stockton.

Fulix marila (Linnæus). Scaup-Duck.

Common throughout the winter.

Fulix affinis (Eyton). American Scaup-Duck.

[Found on the coast during the winter.—A. L. H.]

Fulix collaris (Donovan). Ring-necked Duck.

On a journey from San Antonio to Eagle Pass in December I shot one on the Nueces River, seeing several more at the same time.

Æthyia americana (Eyton). American Pochard.

Not uncommon during the winter.

Æthyia vallisneria (Wilson). Canvasback.

I shot two on the Nueces River in December, and saw several at Turkey Creek.

Bucephala albeola (Linnæus). Buffle-headed Duck.

I have been told that this Duck is found at the Boca del Rio

Grande during the winter. I had the skin of a male bird sent to me that had been shot at Fort Stockton.

Mergus americanus, Cassin. American Goosander.

Found occasionally during the winter. The collection I have mentioned from Fort Stockton included a male and two females of this species.

Lophodytes cucullatus (Linnæus). Hooded Merganser.

Found on the Leona, Medina, and Nueces Rivers, and probably on most of the larger streams also, but nowhere common.

Chroicocephalus atricilla (Linnæus). Laughing Gull.

Abundant on the sea-coast during the summer. I saw great numbers off Bagdad from June to August; and when at Galveston in June 1864 I found them breeding there abundantly, making a very slight nest of straws and drift-stuff, in which they lay four eggs. The nest is generally placed on the ground or on a tussock of grass.

Sterna aranea, Wilson. Gull-billed Tern.

Not uncommon near Matamoras in July and August. On June 2, 1864, I found it breeding on Galveston Island, the eggs being then incubated. The nest is generally merely a hole scratched in the sand, but in some instances an attempt had been made to form a bed of straws and drift-stuff. The eggs are generally three, but sometimes four in number.

Sterna regia, Gambel. Royal Tern.

Common at the Boca del Rio Grande during the summer.

Sterna fuliginosa, Gmelin. Sooty Tern.

I saw two at Galveston in June, but found no nest there.

Sterna wilsoni, Bonaparte. Wilson's Tern.

I procured one specimen at San Antonio in May 1864, and in June found numbers breeding in Galveston Bay, the eggs being either near hatching or else hatched-out. The nest is made in the high piles of drift-stuff; and the eggs, three or four in number, much resemble those of *Sterna fluviatilis*, as might be expected.

Sterna frenata, Gambel. American Lesser Tern.

Common on the coast during the summer. I often saw them at the lagoon near Matamoras, and they were abundant at the Boca Grande. In June 1864 I found them breeding in West Galveston Bay on the small shell-bars or sand-islets, and not on the main island. The nests were merely slight depressions in the sand; but I only found three, each containing one or two eggs, which were quite fresh; I was also told by the man I had with me that they breed very late.

HYDROCHELIDON PLUMBEA, Wilson. American Black Tern.

Common at the Boca Grande during the summer, but I did not observe it at Galveston. At the town-lagoon at Matamoras I have often seen twenty or thirty of these birds at one time. One was sent to me from Fort Stockton.

RHYNCHOPS NIGRA, Linnæus. Black Skimmer.

In June and July 1863 I often saw six or seven of these birds at the Matamoras lagoon, and found them abundant at the Boca Grande. In June 1864 they were common at Galveston, but I found no eggs; indeed I was told that it was too early in the season.

PELECANUS ERYTHRORHYNCHUS, Gmelin. Rough-billed Pelican.

[Not uncommon on the coast during the autumn and winter. —A. L. H.]

PELECANUS FUSCUS, Linnæus. Brown Pelican.

Common at the Boca Grande in June, July, and August, and abundant at Galveston in June; but as they had then finished breeding, I consequently procured no eggs.

TACHYPETES AQUILUS (Linnæus). Frigate-bird.

I shot one off the Rio Grande in June 1863.

GRACULUS MEXICANUS, Bonaparte. Mexican Cormorant.

Common near Matamoras during the summer. I saw several Cormorants at Galveston, but did not succeed in shooting one. I received, however, two specimens from Fort Stockton.

PLOTUS ANHINGA, Linnæus. Darter or Snake-bird.

Common on all the large rivers in Texas. I shot one on the Medina on the 5th May, and one was sent to me from Fort Stockton.

Colymbus torquatus, Brünnich. Great Northern Diver.

A specimen of this Diver, in immature plumage, was sent to me, marked as having been obtained at Fort Stockton, 6th November.

Podiceps californicus (Heermann). California Grebe.

I shot one specimen at Mitchell's Lake, in December 1863.

Podilymbus podiceps (Linnæus). Pied-bill Grebe.

Not uncommon near San Antonio in the winter. I observed several on a pond near Matamoras in August 1864, and shot two, one of which I now have in my collection. Another (a young bird) was also sent to me by Colonel M'Cormick, in the collection made by Mr. P. Duffy at Fort Stockton.

III.—*Field Notes on* Lophortyx gambeli.

By Elliott Coues, M.D.

To study the habits of Gambel's Quail we must leave far behind us all the luxuries and comforts of civilized life. A thousand miles beyond the advance-wave of the western tide of civilization we must go, and stop just before meeting the receding under-tow that is now setting back from the Pacific coast of North America towards the Rocky Mountains. Between the two points there is a wild region over which the savage Apaché Indian is still master, where the white man only retains his hold by daily-renewed hand-to-hand conflicts. It is a region of which it may be truly said that there is "the very grandeur of desolation." The face of nature is torn, as by Titanic violence, into yawning chasms, rocky cañons, and dry, tortuous arroyos, upheaved into stately mountains and grotesquely-shaped picachos and precipice-bounded mesas, covered for hundreds of miles with black lava vomited ages ago from extinct and now unrecognizable volcanos. Rivers there are in whose dry sandy beds the traveller may perish from thirst—and vast plains, too, covered with dry crisp grass and sage-brush (*Artemisia*) and grease-wood (*Larrea mexicana*), yet almost deserts from this same dearth of water. But it is a country of anomalies and contrasts as well as of wonders. Embosomed in the wildest of mountains are lovely valleys, moist, green, and fertile. Vast forests of noble pines and firs, and immense tracts of piñon (*Pinus edulis*) and cedar (*Juniperus pachyderma*, and one or two other species), alternate with barren and desolate lava mal-pais*; hill-sides are covered with oak, mezquite (*Algarobia glandulosa,* the sweet "beans" of which are valuable for food), and manzanita (*Arctostaphylus tomentosus*) (literally "little apple," from the appearance of the berries); while the borders of running streams are fringed with cotton-woods (*Populus monilifera*) and willows and walnuts, and fenced in by almost impenetrable walls of grape-vines, wild gooseberries, green-briar, rose-bushes, and, it seems, every variety of rank luxuriant undergrowth.

The region thus sketched in the most meagre outline is Arizona Territory, only just now beginning to be reclaimed from its pristine wildness, and appropriated by the white man for his own use, on the principle that "might makes right"—a country where man stands face to face with Nature herself, and must sturdily wrest from her his subsistence or perish. Civilization, in Arizona, is only, as yet, like the few desultory, hesitating drops that form the *avant-couriers* of the approaching shower. Men live scattered over the country in little knots, gathered together for mutual safety, and the intervening distances are full of danger and difficulty. Steam has, as yet, shortened no one of Arizona's miles, nor lent its giant strength to the farmer or the mechanic; and so rudely simple is the mode of life, that Arizona seems, to one reared in refinement and luxury, hardly less strange in its society than in the want of it. But here is the chosen home of this beautiful Plumed Quail; and here, too, must the naturalist make his home for awhile, if he would learn its habits.

Walk abroad with me this bright October morning. We must not go far, or our scalps may decorate an Apaché wigwam to-morrow. How different is everything from the scene presented at the same season in New England! Mountain, plain, and valley, forest, stream, and desert, are each cast in a widely diverse mould. The fauna and the flora, and the very rocks, are of a new, strange type; while the atmosphere itself seems hardly composed of the same elements. Instead of the gorgeous tints of maples, beeches, and hickories, the deep, never-changing sombre green of the pines and cedars meets the eye. No cold, bracing air is felt: all the rich, luxuriant warmth of September is still unaltered; but an indescribable something there is about it, so pure, fresh, and invigorating, that the thrilling of the nerves it causes is almost intoxicating. But deep draughts of the living oxygen we must take, and dilate the chest to the utmost; for we are seven or eight thousand feet above sea-level, and the dry thin air hardly satisfies lungs accustomed to a heavier, more humid atmosphere. In all there is a strange admixture of new and wonderful with old and familiar things. Along the banks of some clear creek we may fancy ourselves still in New England; for a heavy fringe of cotton-wood, willow, and walnut clothes its banks, and their leaves are of the purest golden. The showy *Solidago*, with its brightest of chrome flowers, meets us on every hand; and as we recognize the old friend, side by side with it we notice the crimson-red pulpy fruit of the prickly pear*—a strange neighbour. And in the tangled patches of *Smilax*, in the graceful festoons of wild grapes, and clusters of rose-bushes we recognize still other familiar things, which, however, seem rather to heighten by contrast, than to lessen, the feeling of loneliness and home-sickness that so many new and strange things conspire to produce. The little ground-squirrel (*Tamias dorsalis*), scampering among yonder rocks, is not our familiar little "chip-muck," but a shy, retiring species that never leaves his favourite boulders. That little brown bird that is sitting on yonder dead limb is surely a Pewee (*Contopus*, sp. nov.), but how different is his cry, as he darts after a passing insect, from the sad, soft, "pee-a-wee" that fills our eastern woods. The harsh scream of the Jay (*Cyanurus macrolophus*) in that tall pine certainly sounds familiar; but as we catch a glimpse of him through the thick foliage, lo! he is almost black instead of olive, and his crest is so long that it seems ready to topple over. Wander on, and muse on, and let spacedefying thought fly eastward, where are all you love most on earth, and try to foretell what "all those sad to-morrows" that must elapse ere you see them again will bring. Hark! What is that rustling in the thick brush beside you? "*Chink-chink-chink*," whisper a dozen anxious throats; and the next moment, *whir-r-r*! up and off like the wind, scatter the startled bevy, seeming to shake the very air with the vigorous beats of their strong concave wings. We have stumbled upon a bevy of the lovely Plumed Quail (*Lophortyx gambeli*) enjoying the first warm days of the sun after the cool, frosty nights. Now let the game, this glorious autumn day, dissipate your sad home-yearnings; forget them all in the excitement of the chase; for the birds are well worthy of the keenest sportsman's pride. Mark them down; hold gun, and nerves too, in readiness for less than a moment's warning. Advance quickly: these birds rarely lie so close as the Virginia Quail (*Ortyx virginianus*), and you will hardly find them where you saw them alight. See the dog! How his eyes glare, and his lips slaver, and his rigid limbs quiver! Bang! bang! Well done! You have dropped both birds, and the dog will bring them. No mean feat it is to drop two single Quail at a double shot. Reload in haste, for, remember, a sportsman's "first blood" only whets his appetite; his bag must be filled before his ardour is sated. So shoot away, only seeing that you kill no more than you wish to use; God made them for your pleasure: do not abuse his kindness.

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* The term applied to a country whose surface is covered with more or less comminuted results of volcanic eruption.

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* Any one of the numerous species of *Opuntia*, which, with many kinds of *Cereus* and other genera of *Cactaceæ*, form a very prominent and characteristic feature of the Arizonian flora.

Now let us stop and rest awhile on this grassy knoll, and look more carefully at our game. What beauties they are! Mark the splendid crest of long, dark, glossy, helmet-shaped feathers, growing broader at their ends, and curving so gracefully forwards. What a clear, pure colour is that of their back! and how artistically is its uniformity relieved by the pretty, deep, purplish-red and white of the long feathers of the sides, that curl over the edges of the wings and seem to hold them up! And what a regular double row of yellow scallops there is adown each side of the back! How pure a black spot in the middle of the belly! What a fine contrast is presented by the chestnut crown and black throat, each hemmed so neatly by a border of white! And so plump! and such a deliciously fragrant odour is exhaled from their fresh bodies! Should the suddenly snapped thread of home-thoughts float again before your mind, I am sure you will exclaim, between a sigh and a smile, "There are some things worth leaving home for, and ornithology is one of them!"

Beautiful to the eye, soft to the touch, fragrant to the smell, delicate to the palate, indeed, is the Plumed Quail—a superb bird. Since the first one I saw, years ago, stuffed, and awkwardly nailed to a bit of board to "grace" a museum, I have always admired them; and now that I have seen them alive, in their homes, and handled them before the brightness of their eyes was dimmed, and kept the little chicks as pets, I love and admire them the more, and think there is scarcely another bird in our country so beautiful. Their form is plump and rounded, though without the slightest trace of dumpiness; for their necks and tails are very long, their heads small, and the elegant recurved plume gives their whole bearing an appearance of graceful pride. Their carriage is firm and erect, but at the same time light and easy. It is a beautiful sight to see the male bird strutting proudly, with erect head, flashing eyes, and quivering plume, along the fallen log beneath which his little family are snugly hidden. So brave and so weak; so full of the will to protect them, so wanting in the power! Among men is there a situation that fills us with warmer admiration, yet affects us more sadly, than this very one? The colours, too, of the bird are no less pleasing than is its form. There is, indeed, no gorgeous display of colour, no flashing lustre or changing of tints; yet the harmonious blending of some, the artistic contrast of others, together produce rare beauty. Formed to please the naturalist, the artist, and the sportsman—three types of men by no means very dissimilar—the Plumed Quail has yet other charms; for in the fragrant odour and delicious flavour of its soft white flesh an epicure of the most capricious taste cannot fail to be abundantly satisfied. And with a disposition as amiable and peaceful as its colours and form are beautiful, there is nothing to be scored against its long list of good qualities. Could but one of our species attain to its innocent perfection!

It was late in July when I arrived at my destination in Arizona, where, as I soon learned, the Quails were exceedingly abundant. Almost my first act, ornithologically speaking, was to stumble upon a brood just out of the egg; but the active little chicks scrambled off and hid themselves so dexterously that I could not catch one. I remember that I then mistook them for the *Oreortyx pictus*, from the shape of the crest, which at an early age is not at all recurved; and also that I wondered to find newly-hatched birds so late in the season. But throughout the month of August I met with broods only a few days old. The following year, old birds were found mated by April 25th, and I saw the first chick on the 1st June. The species must, then, be engaged in incubation, at least in the latitude where I made my observations, during the whole of May, June, July, and part of August; and I think it probable that they raise two, or possibly sometimes three broods a year. The largest numbers that I have ever seen in a brood were between fifteen and twenty; the smallest, six or eight. By the 1st October, though I occasionally met with half-grown birds, the majority were already nearly or quite as large as the parent, and so strong of wing as legitimately to warrant the sportsman's attention.

As long as the young broods require the care of the parents, they keep very close together, and when alarmed either run away so rapidly, or squat so pertinaciously, as to be very difficult to flush; and when forced up, they fly off in close company, and generally quickly alight again. At this time they take to low limbs of trees and to bushes, as often as, or, as I have sometimes thought, oftener than to the ground. There they sit still, closely huddled together, and, fancying themselves concealed, admit of a very close approach. Later in the season, however, when fully mature, they much more rarely take to trees, and are far more watchful and difficult of approach. The first intimation that a bevy is near is invariably a single note, quickly repeated two or three times, followed by a rustling of dry leaves as the flock starts to run. The next step towards them, and they are off with a whirr, scattered like shot in every direction.

With the exception, perhaps, of thick pine woods, wanting in undergrowth, these birds frequent every sort of locality. They seem, however, to be particularly fond of the tangled, briary undergrowth and thick willow copses of the creek-bottoms, and the heavy "chaparral" that fills the mountain-gorges through which flow little streams. But they are also very plentiful on broken, rocky hill-sides, among the thick scrub-oak*, mezquite, and manzanita bushes that almost invariably cover such situations, as well as in the patches of heavy dry heath (*Artemisia, Larrea,* and the like) that converts extensive plains into chaparral†. But I have so often found them in every situation, that I can hardly say that they have any special preference. In laboriously climbing among huge bare granitic or old-red-sandstone boulders, hunting for *Salpinctes obsoletus,* I have often found them; and once a bevy whirred up from a little dry knoll in the midst of an extensive reed-marsh, where I was wading in water up to my middle, trying to detect an *Agelæus tricolor* or *A. gubernator* among the thousands of *A. phœniceus* all about me.

Like all its tribe, Gambel's Quail is chiefly graminivorous and frugivorous, though insects form no small portion of its food. Seeds of all kinds of grasses, berries of all sorts, wild grapes, all the numerous small plant-infesting beetles, with flies and other soft insects, are all to be found in its crop. Doubtless, should Arizona prosper in an agricultural sense, wheat, barley, and other cereals will become acceptable to it; but it has hardly as yet had an opportunity for the cultivation of a taste for these productions. In early spring it feeds very extensively on the tender, fresh buds of young willows; and then the salicine in these communicates more or less of a bitter flavour to the flesh, just as, in Labrador, I have found the flesh of the *Canace canadensis* and *Lagopus albus* greatly injured in flavour by the resinous buds on which they feed during spring and summer.

I have heard three distinct notes from *Lophortyx gambeli,* and only three, though there may be more. The first is the common cry, uttered on all occasions of alarm, or to call or keep a bevy together. It is a single, mellow, clear "chink," with somewhat of a metallic resonance, quickly repeated an indefinite number of times. I may remark, by the way, that it is so exactly similar to the common note of *Guiraca melanocephala*, that I have been more than once deceived. The next kind is a clear, loud, energetic whistle, resembling, to my ear, the syllables "killink, killink." This is chiefly heard during the pairing-season, when the male in some secluded spot is busy paying his addresses to and trying to win the favour of his chosen partner. It is analogous to the "bob-white" that has earned for *Ortyx virginianus* its popular appellation. The last note is the "song" proper of the species, though, if song it be called, it is so entirely upon the principle of *lucus a non lucendo*; for anything more unmusical can hardly be imagined. It is uttered, I believe, only by the male, and only, I am also of opinion, when the female is incubating, or attending to a very young brood. At sunrise and sunset the song is cheerfully poured forth. Mounted on the topmost twig of a scrub-oak or willow-bush, near the spot where his mate is sitting on their joint treasures, with outstretched neck, drooped wings, and plume dangling negligently over one eye, he makes the place resound with his odd, guttural, energetic notes. To me they sound something like the cawing of a cachectic Crow weary of life, or perhaps in love, a little mixed in tone with the cooing of a Dove. But what matters it how awkwardly we may interpret his Anacreontics, she, for whom they are intended, understands them well; and sweeter than all other sounds must they fall upon her ear, assuring her of undiminished love and unwavering devotion.

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* All the species of *Quercus* that I have met with in Arizona, with one, perhaps two exceptions, are rather scrubby bushes than trees.

† "Chaparral," a generic term, very indefinitely used to designate tracts covered with any sort of thick, scrubby bushes; "brush" is our nearest equivalent.

The elegant crest which forms so marked a feature of this species becomes apparent at an exceedingly early age; in fact in chicks only a few days old it is readily discernible. It then consists of a small, short tuft of three or four feathers, rather brown than black, not growing larger towards their tips, and directed straight backwards. It is some time before the feathers become club-shaped and directed forwards; indeed the change is not complete until full maturity is attained. In the female, although the plume is of the same general shape and character as in the male, yet it is rarely, and then only very slightly, recurved, and is always much shorter. In an adult male in spring the plume is pure glossy black, and from an inch and a quarter to nearly two inches in length, averaging, perhaps, one inch and a half. The female rarely, if ever, has a plume more than an inch long. The number of individual feathers composing this ornament varies greatly. Sometimes there is but a single one, in other instances as many as eight or ten; five or six is the average. They all spring from a single point in the middle of the vertex, just posterior to the white line that traverses the crown from eye to eye. The individual fibrillæ are rather more loose, especially the terminal ones, than are those of ordinary feathers. The webs are bent abruptly backwards from the shaft until they are nearly parallel to each other, and the shaft itself forms the convex anterior border of the feathers. Each feather is thus folded or doubled back upon the one next succeeding, the whole being packed together in an imbricated manner as one feather. The mobility of the crest is very considerable, and is apparently entirely subject to the will of the bird. So far as I have had opportunities for observing, it is oftenest carried very nearly erect; though at times it is strongly inclined forward, overhanging the eyes or bill, or is allowed to droop horizontally on the nape.

Besides the distinction in the crest already mentioned, the female differs from the male in the total absence of the chestnut, black, and white markings of the head and throat, and she also wants the large black abdominal area. In other respects she is similar, except that there is a general dulness of all her tints, and that she is considerably smaller. The difference in length amounts to an inch or more, and her other dimensions are proportionally less. The differences between adult individuals of either sex are inconsiderable, and are chiefly confined to variations in the extent and intensity of the markings.

The moult, which takes place immediately after the completion of the duties of incubation, is exceedingly slow and gradual; so much so, that I have very rarely shot a specimen, at any season, so depilated as to be unfit for preservation. The feathers of the plume are cast very gradually, so that, though instances do occur, it is unusual to find a bird entirely deprived of this ornament.

Compared with the eastern Quail (*O. virginianus*), from the sportsman's standpoint, Gambel's Plumed Quail is more difficult to kill. Not that it rises with more startling suddenness, or flies faster; for I noticed no material difference in these respects. But when a bevy is flushed, and one, or at most two birds secured, it is exceedingly difficult, and usually only by chance, that other shots are obtained. For, except under certain circumstances, they lie very badly; and when they drop after being for the first time started, it is not usually to squat and remain hid, but to run as fast and as far as possible; so that if found at all, it will be dozens of yards from where they were marked down. This propensity to run, which is also a great obstacle to their being flushed within a proper distance, is exceedingly troublesome both to the sportsman and his dog; so much so, that the best-trained dogs can often be of but little or no service. It is true that this habit of running affords many shots on the ground, and often places the whole bevy directly under fire; but no true sportsman would thus ingloriously fill his bag by "potting" a bevy of such noble game-birds. Like all the tribe, their flight is exceedingly rapid and vigorous; but it is always even and direct, so that it only requires a very quick hand and eye, and the usual intuitive calculation for cross-shots, to kill them readily. Notwithstanding all that I have heard to the contrary, I consider them far from being tough birds; and No. 8 shot is abundantly large enough for them. The fault in most cases, I presume, is with the shooter rather than the shot. I may add that many of the places in which bevies are to be found would compare unfavourably with the worst Woodcock-brake of the Eastern States as regards facilities for obtaining a fair shot. I have had a bevy flushed all around me, and hardly caught a glimpse of a feather. But these and all other difficulties should only increase one's ardour, and confer additional value on the lovely birds when obtained.

Fort Whipple, Arizona,
August 1st, 1865.

IV.—*On a New Species of the genus* Polyplectron.

By D. G. Elliot, F.Z.S., &c.

I am indebted to the kindness of M. Jules Verreaux for the placing in my hands a new *Polyplectron*, which in general appearance compares favourably with the handsomest of the known species of the genus. It was sent to the Museum of Paris from Cochin China by M. Germain, after whom I have great pleasure in naming it

POLYPLECTRON GERMAINI.

Nigro-fusco vermiculatum; dorso, alis caudaque splendide viridi ocellatis, fusco-albido marginatis; capite et collo albo striatis; gula alba; rostro pedibusque nigris, mandibula albida.

General colour blackish-brown, irregularly spotted with light brown. Head and back part of the neck black, each feather being barred with white. Back, wings, and tail covered with metallic spots; in some lights of a dark lustrous green, in others of a rich purple. Primaries dark brown. Upper mandible black, lower one light horn-colour. Feet black.

Whole length	20	inches.
Wing	7·5	,,
Tail	10·5	,,
Bill at gape	1·2	,,
Tarsus	2·5	,,

This species comes nearest to *P. chinquis*, but is very easily distinguished from that bird by its much darker hue and the very different coloration of the ocellated spots on the back and tail, which are far more brilliant and rich in the present bird. The specimen described is an adult male in perfect plumage. The female has not yet been obtained.

V.—*Note on the Species of the genus* Muscisaxicola.

By P. L. Sclater, M.A., Ph.D., F.R.S., &c.

I have read with great pleasure Messrs. Philippi and Landbeck's article in the first part of Wiegmann's 'Archiv' for 1865, on the species of the genus *Muscisaxicola**; and having also had the advantage of examining specimens of the new species described therein, which Mr. O. Salvin has lately obtained from Herr Dr. F. Leybold of Santiago, through Dr. J. A. Kuhn of Munich, I beg leave to be allowed to offer a few remarks upon the subject, taking the species in the order given by Messrs. Philippi and Landbeck.

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* "Monographie der Südamerikanischen Muscisaxicolinen," Wiegm. Arch. 1865, p. 74.

1. MUSCISAXICOLA ALBIFRONS (Tsch.); Philippi & Land. *l. c.* p. 78.

Of this species I possess specimens obtained by Mr. Fraser on the Andes of Ecuador (Panza and Pichincha), as recorded in the Zoological Society's 'Proceedings' for 1860, pp. 78 and 92. I have little doubt of the identity of my birds with Tschudi's *Ptyonura albifrons,* although I agree with Messrs. Philippi and Landbeck that the figure in the 'Fauna Peruana' is barely recognizable. But I rather doubt whether the bird obtained by Froben above Tacna in Peru, and described by Messrs. Philippi and Landbeck, really belongs to the same species. I certainly could not attribute to my skins a "*weisslicher Spiegel auf den Flügeln.*" In both my specimens the wings are dark greyish black, with very narrow greyish edgings to the secondaries and coverts, but hardly any edgings perceptible on the primaries. The habitat of *M. albifrons* appears to be Northern Peru and the highlands of Ecuador.

2. MUSCISAXICOLA CINEREA, Philippi & Landb., nov. sp., *l. c.* p. 80.

This may possibly be the same species as that described by Lafresnaye (Rev. Zool. 1855, p. 61) as *M. albimentum,* although Lafresnaye's expression "*supra tota fusco-grisea, pileo brunnescenti-fusco*" does not quite suit *M. cinerea,* of which the head is nearly uniform grey with the back. *M. cinerea* lives in the Cordilleras of Santiago, Chili, at a height of 10,000 feet above the sea-level.

3. MUSCISAXICOLA MACULIROSTRIS, Lafr. & d'Orb.; Philippi & Landb. *l. c.* p. 82, appears to have a very wide range. Mr. Fraser obtained examples at Calacali, in Ecuador, 8000 feet above the sea-level, which are now in my collection. D'Orbigny procured it on the high tableland of Bolivia, near La Paz. Burmeister records

its occurrence near Mendoza, on the eastern side of the Andes; and in the Cordilleras of Chili it appears to be found in many localities.

4. MUSCISAXICOLA MENTALIS, Lafr. & D'Orb.; Philippi & Landb. *l. c.* p. 85.

My specimens of this species were obtained by Mr. Bridges, probably in Chili, where, from Messrs. Philippi and Landbeck's observations, it appears to be very abundant. It is found also in Bolivia (D'Orb.), Peru (Tsch.), and Patagonia (D'Orb.), apparently descending into the lowlands in winter, and passing the summer among the higher Andes.

I have one example of *M. macloviana* from the Falkland Islands. This form may be entitled to specific separation on account of its larger size, though otherwise hardly different. I measure as follows:—

	Long. tota.	alæ.	caudæ.	tarsi.
M. macloviana	7·2	4·5	3·00	1·25
M. mentalis, a.	6·0	3·7	2·25	1·10
,, ,, b.	6·2	4·0	2·50	1·10

5. MUSCISAXICOLA RUBRICAPILLA, Philippi & Landb., sp. nov., *l. c.* p. 93.

Undoubtedly a good species, I think, judging from the single specimen obtained from Dr. Leybold. Inhabits the Cordilleras of the Chilian provinces of Colchagua and Santiago.

6. MUSCISAXICOLA RUFIVERTEX, Lafr. & D'Orb.; Philippi & Landb. *l. c.* p. 95.

My Bolivian examples of this species agree with the Chilian skins received from Dr. Leybold.

7. MUSCISAXICOLA FLAVIVERTEX, Philippi & Landb. *l. c.* p. 98, is certainly *M. flavinucha*, Lafr., described and figured Rev. Zool. 1855, p. 59. I have a single specimen in my collection, said to be from Chili.

8. MUSCISAXICOLA NIGRIFRONS, Philippi & Landb. *l. c.* p. 101, is a good species. To me it seems most nearly allied to *M. albifrons*, but differs in its black forehead, lighter upper surface, and longer bill. I suspect, however, this is Burmeister's *Pty-*

onura frontalis (Journ. f. Orn. 1860, p. 248), although his description is not quite accurate.

As is the case with Messrs. Philippi and Landbeck, I have not met with *M. striaticeps* (Lafr. et D'Orb.), *M. capistrata*, Burmeister, *M. brunnea*, Gould, or *M. albilora*, Lafr.

The nine species of *Muscisaxicola* known to me may be arranged as follows :—

a, species rostro unicolore nigro.
a', macula nuchæ nulla.
a''', loris albis. { fronte pileo concolore . (1) *albifrons.*
fronte nigra . . . (2) *nigrifrons.*
b''', loris cinereis . . . . (3) *cinerea.*
c''', loris nigris { major . . . . . . (4) *macloviana.*
minor . . . . . . (5) *mentalis.*
b'', macula nuchæ distincta.
d''', mac. nuchæ flavida . . . . . . (6) *flavinucha.*
e''', mac. nuchæ rubra { major . . . (7) *rubricapilla.*
minor . . . (8) *rufivertex.*
b, sp. rostro ad basin flavo . . . . (9) *maculirostris.*

In my 'Catalogue of American Birds' (p.206) I have associated with this genus the *Tænioptera rubetra* of Burmeister (J. f. O. 1860, p. 247), of which curious bird I have a single specimen. This species, however, is certainly not a typical *Muscisaxicola*, and, I fear, must ultimately be made the type of a new genus.

I may remark, in conclusion, that there can be no doubt that *Muscisaxicola* is essentially a Tyrannine form, and has no real affinity with *Muscicapa* or *Saxicola*. In the same way, the so-called Chilian "Larks" described by Messrs. Philippi and Landbeck (*Certhilauda*, *Geobama*, &c.) belong to the purely Neotropical group *Dendrocolaptidæ*.

VI.—*On the Ornithology of Palestine.* Part III.

By the Rev. H. B. Tristram, M.A., F.L.S., C.M.Z.S.

(Plate II.)

[Continued from 'The Ibis' for 1865, page 263.]

Next to the Accipitrine order, there are few classes of birds more conspicuous or attractive than the world-wide Crow-tribe.

It is only when we penetrate with our Editor to the frozen rocks of Spitsbergen that we miss the hoarse croak of the Raven or the sombre-clad flocks of the Rook or Jackdaw. There is certainly a lugubrious sameness in the plumage, which makes one's box of *Corvidæ*-skins resemble the stores of a mourning-warehouse, with a slight admixture of the "mitigated-affliction department" in the corner where the Magpies are stowed. But how varied, in life, are the actions, and, above all, the *voices* of those dark-clad groups! Who that has heard the notes of *Corvus umbrinus* and *C. affinis* can ever again confuse them either with each other, or with our old friend *Corvus corax*? And then the skins of the Crow-tribe are so tough, so impossible to soil, and they keep so well, that I never could neglect the chance of skinning a well-shot specimen since the time when, thirty years ago, I tried my 'prentice hand on a Jackdaw, my first schoolboy trophy, in William Proctor's workshop, over the old Durham Museum. But their eggs are most provokingly alike; and Palestine, though it added many specimens and several species to our cabinets, scarcely afforded a new variety or form which could not be exactly matched in the products of our home rookeries or church-towers. To find novelties we must turn to the aberrant members of the group—to the tantalizing and mysterious Nutcracker, so unwilling to be identified, or to the gorgeous-plumaged Jays of Tropical America.

Our acquaintance with the *Corvidæ* of Palestine was formed by slow degrees, although at last we had become thoroughly conversant with all the species and their various haunts. Conspicuous by his absence was the Magpie. Nowhere could we meet with or hear of *Pica caudata*. He may exist in Northern Syria; for Russell, in his 'Natural History of Aleppo,' compiled more than one hundred years ago, mentions it in his scanty catalogue, though without further remark, as inhabiting the environs of that town. It is abundant in Asia Minor, and especially in the island of Cyprus, within sight of the coast of Syria; and we shot several specimens close to the town of Larnaka, on our way to Beyrout. But we did not meet with a trace of it in the Lebanon, or in any other apparently promising district. Its absence cannot be accounted for by the want of suitable localities; for the Lebanon valleys, the northern portions of Galilee, and, above all, the vast glades of Gilead would seem admirably adapted for its resort. Yet the Arabs knew nothing of such a bird, nor had they any name for it; and our muleteer, Khadour, a very intelligent and observant man, who had spent years in travelling over all parts of Syria, assured me, when I showed him a Cyprus skin, that he had never seen such a bird in the country. Nor did I obtain any further recognition from Arab fowlers who likewise saw the skin. Thus the southern limit of the range of the Magpie seems very sharply defined. I am not aware that it has ever been found in Egypt. The congener in Algeria and Tunis, *P. mauritanica* (Malh.), never penetrates beyond the wooded range of the Atlas. The Indian *P. bottanensis* (Deless.) never comes south of the Himalayahs. The Chinese *P. sericea* (Gould), barely distinguishable from the European species, descends, however, almost to the tropics; while the American *Pica hudsonica* (Bp.) appears to be almost confined to the Arctic regions and high central plains of Western America, and the *P. nuttalli* (Aud.) to the coast-line of California. Thus everywhere there is a striking contrast between the restricted limits of the genus *Pica* and the wide range of the *Corvinæ*, which cannot be accounted for by any difference we yet know between the habits and conditions of life of the two genera.

During the month of November, beyond the occasional glimpse of a distant Raven, the only bird of the family we met with in the Lebanon was the Black-headed Jay, *Garrulus melanocephalus* (Bonelli). There it was very scarce and cautious. On the coast it never occurred till we reached the wooded district of Mount Carmel; and in the scattered oak-groves on the road to Nazareth we obtained our first specimen. We had already secured a specimen in Asia Minor, near Smyrna, and found the species in the two countries decidedly to differ in several particulars. In the Asia Minor bird the black of the crest descends, as in the Algerian *G. cervicalis* (Bp.), close to the coverts of the nostrils. In all the Palestine specimens, and I speak from a very large series, there is a broad frontal line, or white forehead, before the commencement of the black crest, and a whitish line over the eyes, which is narrower and more russet-coloured in the Smyrniote bird. The forehead of the English Jay is streaked with black, of which there is no trace in that of the Syrian bird. The back of this latter is several shades lighter in colour than that of the Asia-Minor form, which is nearly as dark as the Algerian *G. cervicalis*, but without its rich chestnut nape and shoulders; the breast and abdomen also resemble the Algerian in being rather ashy-brown than russet-brown, which is the Syrian hue; but in all other particulars, in size, in the dark outer rectrices, in the absence of the chestnut collar and shoulders, in the extent of the black crest to the nape of the neck instead of barely reaching the occiput, as in *G. cervicalis*, the Syrian and Asia-Minor forms are identical.

In the differences between these two local races I think we may find a solution for the confusion into which the synonymy of the group has been thrown. Bonelli described his *G. melanocephalus* from an Asiatic specimen in the Turin Museum. Malherbe, finding this description to suit the conspicuous feature of the black crest continuous from the forehead, applied it in his Catalogue of 1846 to the Algerian bird. Schlegel then evidently took his *G. melanocephalus* from an Asia-Minor bird; and Prince Bonaparte, in his 'Conspectus,' has (a rare accident with that indefatigable ornithologist) confused the three, and formed his definitions of *G. melanocephalus* (Bon.) and *G. krynicki* (Kal.)—which latter is really the Asiatic bird; while his *G. melanocephalus* (Bonelli) is not so, but is the true *G. atricapillus*, occurring in North Africa only, and not in Arabia or Syria. If we choose to separate the Caucasian and Asia-Minor from the Syrian bird, then we must take the name *G. stridens* of Ehrenberg (as having priority) for the latter. But the Syrian and Algerian species must never be confounded.

Let us, after this digression, pursue our new acquaintance of Carmel. There it was very common, in company with the *Picus syriacus*, of which we obtained our first specimens at the same time. Afterwards we found it abundant, but never without the Woodpecker in company, in all the olive-groves between Nazareth and Jerusalem, at Jenin, especially round Sebustiyeh

(Samaria), at Nablous, Jerusalem, Bethlehem, and Hebron—its extreme southern limit, for south of this are neither woods nor oliveyards. It is most numerous at Kuryet el Enab (Kirjath Jearim), between Jerusalem and Jaffa, in the oliveyards of which it positively swarms. On the east side of Jordan it enlivens with its ringing chatter every forest-glade in Gilead, as well as the old olive-woods of Southern Bashan, and is one of the most abundant and conspicuous inhabitants of the country. We did not, however, observe it in the pine-forests of Ajlun, nor does it appear to straggle into the more open country south of the Jabbok. It is on both sides of Jordan entirely confined to the Hill country or Highlands, and never descends into the sultry Ghor or Jordan valley. Never once did we see or hear of it there, from the Waters of Merom in the north to the south end of the Dead Sea. There are woods and thickets which would seem well suited to its habits, but it shuns those seething hollows ; and though Dean Stanley peoples Gennesareth with "Jays of brilliant plumage in unusual numbers over the entire plain," he evidently, like the French sportsmen of Algeria, mistook the Roller—"Geai d'Afrique," or perhaps the Smyrna Kingfisher, for the Jay, which we can aver is never found near the Sea of Galilee.

Less persecuted than its British congener, it is not quite so shy, but resembles it precisely in voice, flight, and all its habits. It usually congregates in flocks of six or eight. About the environs of Jerusalem it is especially familiar. I rarely carried a gun at Jerusalem; but one wet day I had ridden up from Jericho, and arrived just after the gates had been closed for the hour of noonday prayer. Sitting on my horse, in the soaking rain, outside the Damascus gate, some Jays came unconcernedly to feed among the refuse close to me. The opportunity was irresistible, and I secured two on the spot.

The Jay is an early breeder; but we were occupied at Jericho during its season of nidification, and there it is not found. When we moved north, in April, the young were all hatched, and one nest of four eggs in an oliveyard close to Jerusalem was all we obtained. The eggs are exactly like those of *G. glandarius*, though my specimens are small, and rather rounder and shorter than most British examples. The Jay is mentioned neither by Hasselquist nor Russell.

A few days after we had found our first Jays, in December, we met with the Hooded Crow, *C. cornix,* at Jenin (Engannim), a day's journey south of Nazareth; and neither in winter nor summer did we find it further north. There is not the slightest difference in size or plumage between Palestine and British specimens, except that the former are clearer and brighter in coloration; but as my own British skins are all Durham specimens, their comparative duskiness may be probably attributed to the carboniferous character of the district. It is curious that this bird, merely a winter visitant to all except the more northerly portion of the British Isles, should be sedentary, not only in Southern Syria, but also in Egypt, and that in the north of Palestine it should be, if present at all, at any rate very scarce. It is given by Russell as inhabiting the neighbourhood of Aleppo. There were a few pairs at Jenin, which roosted among the palm trees, where we obtained them as they were returning home in the evening. In the district about Nablous they were scarce, but more numerous at Jerusalem, living there in society with Ravens and Rooks, but not nearly so abundant as the other *Corvidæ.* We never saw them in the southern wilderness, or in the neighbourhood of the Dead Sea; but on crossing to the other side of Jordan, the *C. cornix* was widely distributed over the highlands and open plains of Moab, and in the southern and eastern portions of Gilead, not loving the thick forests, but resorting chiefly to open plains, where a few terebinth trees occasionally varied the landscape.

In these regions we found it breeding, both on isolated trees, in rocks, and in old ruins; and here we found the Great Spotted Cuckoo (*Oxylophus glandarius*) depositing its eggs in its nests, and obtained several. In one instance I fear the foster-child, had we not prematurely intervened, would have had a poor chance in the struggle for existence, since the legitimate eggs were nearly ready to hatch, while the Cuckoos' were only slightly incubated. It was interesting to meet, among the ruins of Rabbath Ammon, with this corroboration of Messrs. Brehm's, Cochrane's, and Allen's observations in Egypt, where they frequently obtained the eggs of *O. glandarius,* but exclusively in the nests of *C. cornix.* In Spain, on the contrary, Lord Lilford this spring took them from the nests of *Pica caudata*; and our Algerian specimens were invariably in the nests of *P. mauritanica.* Of the Carrion-Crow (*C. corone*) we never obtained a specimen, and it does not appear to exist in Palestine.

Two days after we had bagged our first Hooded Crows at Jenin, we met with large flocks of Jackdaws, *Corvus monedula* at Nablous, where they congregate in hundreds over the old vale of Shechem, nesting in the rocks of Ebal and Gerizim, but chiefly in the fine old churches, which, in their decay, provide the devout Moslem with mosques below, and the less dignified Jackdaw with a home over head. We had made it a rule to consider any day ornithologically lost on which we had not procured some additional species to add to our list; and great were the rejoicings when, after a long blank day with nothing new, a Jackdaw was brought down towards evening in an orange-garden, to the great scandal of its proprietor, who growled forth that those unclean Christian dogs would eat anything. The common Jackdaw also resorts in great numbers to the Mosque of Omar in Jerusalem; but these are the only two very large colonies we observed. It occurred elsewhere, but not in great numbers. I shot one near Nazareth, and saw a few at a ruined temple, Thelthathah, near Hermon. It may thus be looked upon as rather local. In the Jordan valley and in Eastern Palestine its place appears to be taken by the closely-affined or climatic variety *C. collaris* of Drummond, with which we frequently met. The history of this last bird is somewhat curious. The type specimen was obtained in Macedonia by our President, Col. Drummond-Hay, many years ago (Ann. & Mag. Nat. Hist. xviii. p. 11), and sent by him to the late Mr. Strickland (P. Z. S. 1846, p. 43). It then slumbered in peace for many years, till our friend Mr. Simpson brought it from the Dobrudska (Ibis, 1860, p. 385). I am not aware of any other specimens being known until we again met with it last year. In habits and voice it no way differs from the common species; but its lighter plumage at once attracts attention. We saw it occasionally in the Ghor; but the only large colonies we met with were at Rabbah (the ancient Rabbath

Ammon) and Gerash (Gerasa). In these lonely spots, utterly forsaken of man, it is to be found in myriads, building undisturbed, in company with the Hooded Crow, in the chinks and crevices of the glorious ruins, sometimes on the tops of columns, and even heaping a barrowful of sticks on the top of an accessible stair in a church tower, in one of which we took the eggs. The eggs are exactly like those of the common species, nor are they perceptibly smaller. We obtained specimens of the bird at all times of the year, and did not find any seasonal variation in the plumage. The principal distinction is in the sharp outline of the black plumage of the head, which barely reaches the occiput, the wide light-coloured collar, and the greyish mottling of the whole of the rest of the plumage, especially on the lower parts.

We were riding across the plain from Nablous on the road to Jerusalem, when, for the first time, we noticed the Rooks fearlessly following the Arab ploughmen at their work. They seemed to smell powder as promptly as their fellows in England; but we obtained two, which, although December was far advanced, had no denudation of the basal portion of the mandibles. We occasionally met with small flocks in the cultivated districts of Central Palestine, but did not come across any rookeries, unless the gathering at the Mosque of Omar in Jerusalem may be so termed. Jerusalem and Nablous seem the headquarters of the race; indeed in a country so bare of wood the Rook must be as hard put to for a home as in central France after the Revolution had stripped the *châteaux* of their ancestral timber. At Jerusalem we found the species very abundant in winter, congregating in the sacred enclosure of the mosque every evening, along with Jackdaws, a few Hooded Crows, and the two species of Ravens, as familiarly as it does with the first of these in England. The different species appeared to go out to feed together, and returned in consort to roost every evening. I am not certain that I observed them on the occasion of my latest visit to Jerusalem in April. Certainly if they remained it was in much diminished numbers, and probably they had at that period sought more congenial places for nidification. But it is possible that some remained; for all the species were so inter-mingled that without close inspection the Rook might easily be overlooked. Having, of course, no European specimens by us for comparison, we did not at the time detect any differences, excepting the very remarkable one, that, with scarcely an exception, the plumage at the base of the mandibles was as perfect as in the Carrion-Crow. All our specimens were shot between December and March. Of eight, which fell to my own share, one only, shot at Nablous on the 28th of February, has the mandibles denuded. A Jerusalem specimen has them very partially so, All my other specimens had the plumage entire, and we observed the same of many others which we had no time to preserve. Thus our induction is sufficiently large, and it is evident that the denudation is no specific character of the adult, but simply caused by abrasion in digging. Yet it is not a little singular that one specimen should be completely denuded, while others, shot out of the same flock and feeding in the same manner, had not shed their plumage. I may observe that Mr. Swinhoe's specimen of *C. pastinator*, shot at Pekin in October and now before me, is only very slightly denuded. Our Palestine experience proves that this peculiarity, cautiously dwelt upon by Mr. Swinhoe (Proc. Z. S. 1863, p. 306) will not *of itself* hold good as any proof of specific distinction. Probably our artificial state of society and the advance of agriculture has much to do with the close-shaven cheeks of our Rooks, which may after all be as unnatural as the carefully scraped chins of humanity. In a country like Palestine, where there is so little true agriculture, and where subsoil-ploughing has not yet been introduced, the Rook is deprived of his razors, for he has no need to plunge so far into the soil for his food; indeed it would be impossible for him to do so. Again, it is possible that he is in Palestine imitating the human inhabitants, fast reverting to a state of barbarism, and losing his civilized and agricultural habits. He does not keep the best of company, and, constantly consorting with Ravens, he may have adopted some of their habits, renounced vegetarianism altogether, even tasted the unclean morsel and found it to his liking.

On our return to England I found by comparison with British specimens that there were sufficient constant differences to justify me, as I believe, in separating the Palestine bird by certain specific characters, which I accordingly did (P. Z. S. 1864, p. 444), under the name of *Corvus agricola.* These differences are, that the feathers of the throat are more lanceolate than in our bird, and especially that the reflexions of the plumage, particularly on the head, which are blue-black in the British bird, and purple in the Chinese, are in this of a greenish-purple black.

We never met with the Rook on the east side of Jordan, though I am not prepared to say it does not exist there. It will be interesting to ascertain whether the Rook mentioned in Blyth's catalogue from Cashmere, and stated by Jerdon also to be found in winter in the Punjaub and Affghanistan, belongs to this, to the European, or to the Chinese species. Palestine seems to be the extreme southern limit of the range of the Rook. It has not been found in Egypt, and Strickland found no trace of it in Asia Minor, though it is reported from the Caucasus. It is not mentioned by Hasselquist, nor by Russell in his 'Natural History of Aleppo.'

The Common Raven (*Corvus corax*) is everywhere present in Palestine, and there, as I have observed also in North Africa, he is, except in the breeding-season, by no means the lonely solitary being which he is held to be in most parts of Europe, but is as sociable and gregarious as the Rook or Jackdaw. He is, however, decidedly averse to a near acquaintance with the gun, and, unless under very favourable circumstances, is only amenable to a green cartridge. Though we daily saw the species, we never obtained a specimen till we were under the walls of Jerusalem. Here, however, it was quite outnumbered by its smaller companion the Brown-necked Raven (*C. umbrinus*, Hedenb.). Of all the birds of Jerusalem, the Ravens are the most characteristic and conspicuous. They are present everywhere to eye and ear, and the odours that float around remind us of their use. The discordant jabber of their evening sittings round the Mosque of Omar is deafening. The caw of the Rook and the chatter of the Jackdaw unite in attempting to drown the hoarse croak of the old Raven; but clear above the tumult rings out the more musical call-note of hundreds of the lesser species. On the evening of our arrival, ignorant of the existence of *C. umbrinus*, we were much perplexed by the new note, but were soon satisfied that we had come upon an additional species. We used to watch this great colony of *Corvinæ* as, every morning at daybreak, they passed in long lines over our tents to the northward, the Rooks in solid phalanx leading the way, and the Ravens in loose order bringing up the rear, generally far out of shot. Before retiring for the night, popular assemblies of the most uproarious character were held in the trees of Mount Olivet and the Kedron; and not till after sunset did they withdraw in silence, mingled indiscriminately, to their safe roosting-places in the sanctuary. On a wet day—and there was some deplorable weather at Jerusalem—the Rooks would pertinaciously set out on their travels; but the Ravens staid at home, sitting about by twos and threes among the olive trees, generally in silence, but ever and anon ejaculating a lugubrious remark on the weather, or warning from their neighbourhood the draggled Jays, whose soft plumage was no better protection than a lady's evening muslin in such a down-pour. Still they kept a sharp look-out, and allowed no near approach on our part. We found that our only chance of obtaining specimens was by shooting them as they came to roost at night; but the Moslems look upon all birds which resort to holy places as sacred, and we were warned by the Consul that firing at them near the Mosque or in the Kedron valley might be deemed sacrilege and provoke an attack by the guardians of the Haram, aided by the boys always on the look-out for the chance of a *mêlée* with Christian dogs. My friends determined however to run the risk, and, having carefully laid their plans, stationed themselves before sunset in convenient hiding-places near the walls, when, as the birds crossed over from the Mount of Olives towards the city, at a given signal they fired simultaneously, and, hastily gathering up the spoils, had retreated out of reach and were hurrying to the tents before an alarm could be raised, as fortunately the gates of the city were already locked. The discharge of ten barrels had brought down fourteen specimens, of five species—*C. corax*, *C. umbrinus* (six specimens), *C. agricola*, *C. cornix*, and *C. monedula*. The same stratagem was repeated with almost equal success the next evening; but on the third occasion the Ravens had learnt wisdom by experience, and, sweeping round over Siloam, chose another route to their dormitory.

On revisiting Jerusalem in March and April we found that the greater part of the large Ravens had left, though many of *C. umbrinus* remained, but by no means so sociable as in winter. Numbers of them paid a visit every morning to the Jewish slaughter-houses, or rather slaughter-places, outside the Damascus gate. They were building, not in communities, but in various scattered localities in the neighbourhood. We never obtained a nest of *C. corax*: though, close to the city-walls in the valley of Hinnom, in a ledge easily accessible, Mr. Egerton-Warburton took a nest with five eggs of *C. umbrinus*.

In the neighbourhood of the Dead Sea the common Raven was never absent, but *C. umbrinus* was also abundant, scattered in pairs or in small companies on every part of the shores. In the Wady Kelt, near Jericho, we found several nests, containing generally five or six eggs, situated on the most inaccessible ledges. We never found it, like the Hooded Crow, breeding in trees, while in Africa *C. corax* selects indiscriminately trees and ledges, even where trees are few. The egg is decidedly larger than that of the Carrion-Crow, but smaller than the Raven's. All our specimens are rather brighter in colour than the ordinary run of Ravens' eggs. Near the mouth of the Jordan I secured a specimen of the Brown-necked Raven just as it reached the shore, which had evidently traversed the lake from the south: and during our slow progress down the west shore of the Dead Sea it was of daily occurrence. There is great variation in the depth of colour. Of fifteen specimens which fell to my own share, while most have the deep brown colour extending down for six inches both on the back and breast, in several it is very faint, excepting on the neck, and one or two are nearly as dark as Carrion-Crows. But they never have the blue-black reflexions of the Great Raven. They are also noticeable for the length of the wing, the primaries extending quite to the end of the tail. The beak is long, very strong, but not so curved as in *C. corax*. But the most striking peculiarity of this bird is the voice, which is very peculiar and when once heard can never be forgotten. It is something between a croak and a caw, loud and ringing. The sexes do not differ in size. I subjoin the measurements—

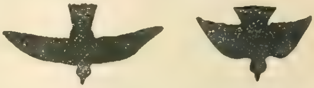
	C. umbrinus.	*C. corax* (Palestine).	*C. corax* (Algeria).	*C. affinis.*
	inches.	inches.	inches.	inches.
Total length	22·	24·	23·	*19·
Wing from carpal joint.	17·	17·25	16·	15·25
Length of tail	10·	10·5	9·75	6·5
Beak from gape ..	2·75	3·125	2·75	2·
Diameter of beak at base	1·	1·25	1·125	1·125
Circumference of beak at base..	2·875	4·	3·375	2·375
Length of tarsus ..	2·5	2·625	2·375	2·25
Length of middle toe..........	2·5	2·875	2·25	2·375

While in *Corvus corax* the wing does not reach the end of the tail by an inch or an inch and a half, in *C. umbrinus* it equals the tail, and in *C. affinis* exceeds it by an inch. In the last-named species the secondary coverts are of an extraordinary length.

One evening in January we were encamped at the foot of the ancient fortress of Masada, the modern Sebbeh, with a waterless, lifeless wilderness of salt-hills stretching in labyrinthic confusion for two miles to the sea. It was a scene of stern grandeur and magnificent desolation, perhaps unequalled in the world. Yet even here were birds. We had made a Lanner surrender the remains of a Pochard he was conveying to the mountains from the lake, when we observed three Ravens making towards us from the sea. They were the only signs of life under that canopy of wondrous brilliancy and depth. They too seemed startled and surprised when they descried our camp on that untrodden shore, and, curiosity mastering caution, wheeled and wheeled again over and over our heads. But long before they came near we detected an unknown species. Two of them were unmistakeably *C. umbrinus*; the third was strangely different. Its flight was very different; it rather sailed than flew, and the motion of its wings was scarcely perceptible. But more marked than all was the contrast of its outline, as shown in the annexed

* Or to end of wing 20 inches.

diagram. Its depth of wing, not only long but very broad, till its secondaries appeared to reach almost to the end of its tail, and its short broad tail extending to twice the width of the other, made it appear to cover double the surface its companions did, and we at once named it the Fantail Raven. But its note was the richest, most powerful, and most musical that ever Raven uttered. No croak, but a long-sustained cheery cry which decidedly belied its relationship. Mr. Shepherd was ready to forego the ascent of Sebbeh for the chance of the prize; and though certainly we would not for all the Ravens of the East have missed the wondrous ruins of Masada and the superb panorama from its summit, it was with a feeling of envy that on our return we found the coveted treasure had at length rewarded his patience; and we handled the miniature Raven, hoping we had made an ornithological discovery. Everything about him bespeaks the Raven, and not the Crow, the short conical massive bill, the long wings, and the uniform rich violet reflexion of his plumage surpassing those of every other species.

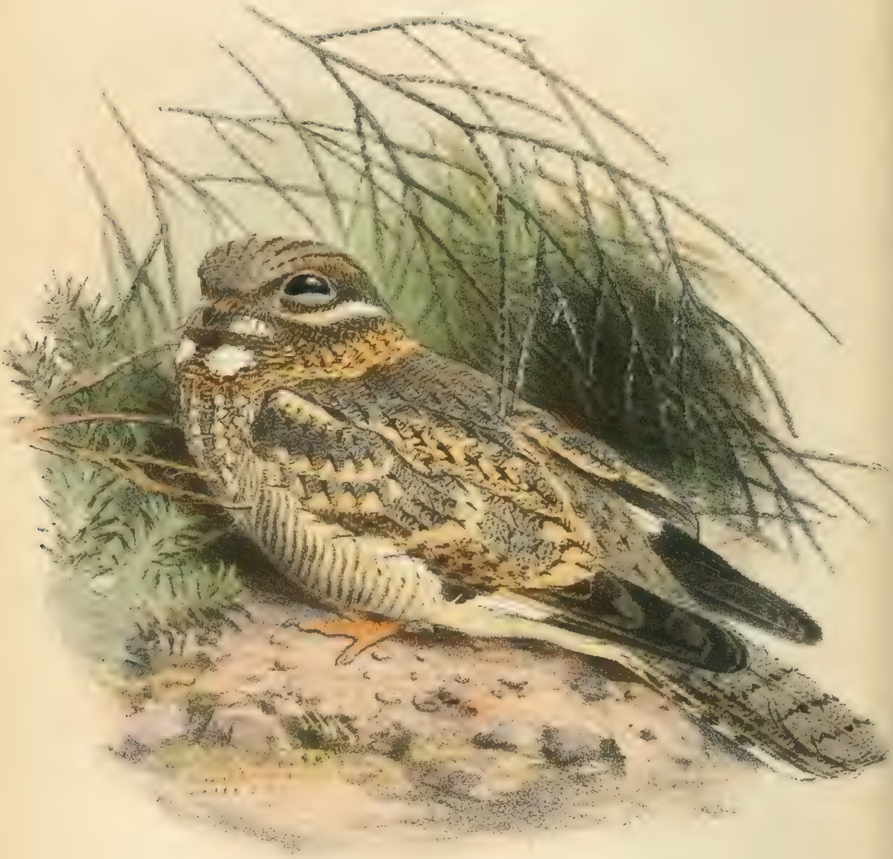


It was long before we met with him again. During our sojourn near Jebel Usdum we constantly saw both the Common and the Brown-necked Ravens, which perched continually on the salt-cliffs, though what, save a love of desolation, could have brought them there it was hard to guess, but no other species could we discover. More than one fell a victim to the rifle-practice of my companions; for they afforded a tempting mark as they sat on the glittering salt-peaks. At length we crossed to the east side, not, however, to meet, as we had hoped, a kindly welcome from the Ghawarineh inhabitants of the rich oasis of Safieh, below Kerak, but to find the smoking embers of a plundered village, strewn with the corpses of the combatants in a recent battle. Thus prematurely our hopes of the richest ornithological harvest in the country were foiled. A few varieties we secured during the afternoon; but, encumbered with human prisoners, for our men had captured more than a dozen, and knowing that the enemy was lurking in the woods, of which the whole district is full, the keenest ornithologist might be excused if he reserved his second barrel for a bullet, and declined to wander far from camp. We had nothing for it but to pitch our tents for the night with what heart we might, and to beat a retreat in the morning. But we could spare two or three hours, and with the dawn we began to look after the birds, which abound in the Safieh to an extent unequalled even in the oases of Jericho. "Wheresoever the carcase is, there will the Eagles be gathered together," and the Ravens also; for the sun was not above the horizon when a steady stream of carrion-eaters, who had scented the battle from afar, began to set in from the south. All the Vultures, Kites, and Ravens of North Arabia seemed to be rushing to the banquet. Against them we perpetrated a regular *battue* on their way to their uncleanly feast. We brought down more specimens than we could carry away of the three species of Raven—the Common, the Brown-necked, and four good specimens of our long sought Fantail, *C. affinis*. The Vultures and Kites sailed too high, out of reach of our shot. Had we not been compelled to leave, we might doubtless have stood among the trees, and, with the human bait before us, have continued our warfare throughout the day. After this we never saw our new friend again; for the south end of the Dead Sea appears his northern limit; nor did we ever meet with *C. umbrinus* north of Jerusalem, not even in the upper part of the Jordan valley. Neither does it ever descend to the coast, where *C. corax* alone is found.

After this we had no expectation of adding to our list of Palestine *Corvidæ*; but six months subsequently, when on the summit of Mount Hermon, we observed a party of black birds gently sailing about the mountain, always keeping to the snow-line. We soon ascertained that they were the Alpine Chough, *Pyrrhocorax alpinus*, Vieill.; for they settled near enough to allow us to distinguish their bright red legs and orange bills. But they were wary and restless, and never approached within gun-shot, while cover or concealment there was none among the rocks and snow. There seemed to be young birds among them, with bills and legs less brightly coloured. Soon afterwards, while crossing the Lebanon, we were more fortunate, and near one of the highest passes south of Ainat we found them in considerable numbers, always, however, in parties not exceeding five or six, but distributed along the whole ridge. They spent the day in gently skimming along the edge of the ridge for some miles, and then, sweeping round to the other side, doubled through a gap in the range, and retraced again and again their former course. We succeeded in securing two or three adult specimens, identical with the Swiss birds. This species seems to have a wide range, extending on mountain-tops, but only near the snow-line, from the Pyrenees, Alps, and Apennines to the Caucasus, Lebanon, Ararat, and the Himalayahs. Its existence on these isolated spots, with many hundred miles of intervening land on which it never occurs, is a curious illustration of the distribution of species. It certainly does not appear to have varied anywhere in the slightest degree from its original type. I do not think that any of its family can approach it in elegance of shape or in gracefulness of flight. We never met with *Fregilus graculus,* the Cornish Chough. Yet surely it ought to exist in the Lebanon (perhaps it does on the more secluded ledges on the western or seaward face), since its range is so much wider east and west, north and south, than that of its congener. We have shot it on the southern side of the Atlas range; and Mr. Swinhoe obtained it as far east as Tientsin in North China, while it is found in Egypt and in the Caucasus. With this exception it seems scarcely probable that further research will add to our list of Palestine *Corvidæ.*

The Fissirostral Ornis of Palestine is more limited in numbers than most of the other classes of its avifauna, and is very far from possessing the rich variety of the Indian and Ethiopian lists. There are, nevertheless, a few very interesting species,—for instance, *Cypselus galilæensis,* before spoken of by me (Ibis, 1865, pp. 76–79), which, as has been pointed out by Mr. Sclater (Ibis, 1865, p. 235), must now be united with *C. affinis,* J. E. Gray, from India, and *C. abyssinicus,* Ehrenberg, from East Africa, the latter name claiming priority; and *Halcyon smyrnensis,* perhaps the most showy bird in the Holy Land. Most of the *Fissirostres* are summer-visitants only, but the most remarkable of them are permanent residents in the warm recesses of the Jordan valley.

Of these the first which came under our notice was the beautiful



J. Wolf del et lith.
M & N Hanhart, imp.

CAPRIMULGUS TAMARICIS

new Goatsucker (Plate II.), described by me last year (Proc. Zool. Soc. 1864, p. 170), under the name *Caprimulgus tamaricis**, from our having found it only among the tamarisk-trees which occasionally fringe the edges of the Dead Sea. The first specimen we obtained was a male bird, on the 13th January, just after sunset, on our arrival at our camping-ground at Ain Feshkhah, near the north-west end of the Dead Sea. This is a strange and isolated spot, an oasis of cane-brakes fringed by tamarisk-bushes, in a little flat fed by an abundant hot spring, and shut in on three sides by savage and precipitous cliffs many hundred feet high, which are the homes of the "coney" of Scripture (*Hyrax syriacus*) and of *Amydrus tristrami.* We watched in vain for another; but at Engedi we saw the species again; and when camped a fortnight later at Jebel Usdum, at the south end of the Sea, we saw several of these birds, and Mr. Bartlett succeeded in shooting one in the gloaming, which he found on the following morning hanging in a bush. Away from the margin of the Dead Sea we never saw it, not even in the sheltered spots which occasionally dot the upper parts of the Jordan valley. I recognize it as the same species which I saw mounted in a collection made by the son of the late Mr. R. Herschell, and which I mentioned in a former volume of this Journal (Ibis, 1862, p. 278) as a small species shot in the valley of the Jordan.

In form and size it much resembles *C. asiaticus*, but it is a trifle larger in all its dimensions, which more closely resemble those of *C. rufigena*, Smith, found in Southern and Western Africa. It differs, however, from this in coloration, and more especially in the shorter wings and longer tail. The colouring differs from that of every other Nightjar with which I am acquainted, but most resembles that of the Egyptian *C. isabellinus* in its tone, and in its distribution *C. ruficollis,* though the bird is little more than half the size of the latter. It has the same russet collar, the white on the throat rather forming two large spots than a gorget, and has narrow black streaks down the centre of the feathers on the forehead and occiput, with large ochreous spots on the upper wing-coverts, its flanks being barred with dark brown. The tail, which is not so pale as that of *C. isabellinus,* is, like it, exquisitely barred and dusted with black spots. Of course we never found it breeding, since, excepting for one single day, we did not revisit its haunts after February. Like all the other peculiar birds of the Ghor, and unlike its congeners, it must be a permanent resident. Its call-note resembled that of our Nightjar.

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* As a matter of convenience to my readers, I append at full length the description of the species as given in the 'Proceedings of the Zoological Society' above cited.

"CAPRIMULGUS TAMARICIS.

"Cinerascenti-isabellinus, nigro minute vermiculatus: fascia collari postica et maculis humeralibus rufescenti-isabellinis: mento et fascia gulari albis: alarum primariis nigris, vitta lata alba; secundariis rufis, nigro transfasciatis: alis intus et tectricibus subalaribus pallide rufis: caudæ rectricibus duabus utrinque externis pallide rufis, nigro frequenter et irregulariter transfasciatis, apicibus late albis; ceteris dorso concoloribus.

"Long. tota 9·0, alæ 5·6, caudæ 4·2."

We several times met with *Caprimulgus europæus* after the beginning of April, in the first week of which month I found it at Jericho. A skin of *C. ruficollis* was offered to me for sale by a Greek at Jerusalem, who assured me he had bought it in the flesh in the market there; and as all his other birds were unquestionably natives, I had no reason to doubt his statement; but his price was prohibitory. I have remarked that, while in Algeria the Common Nightjar is a winter visitant only, the Red-necked species is certainly only a summer migrant, though very abundant. It is curious that in the more southern latitude of Palestine this certainly does not hold good, and that neither species should remain through the winter.

In the first part of these notes (Ibis, 1865, pp. 76–79) I have already fully described the habits and nidification of *Cypselus abyssinicus* (=*galilæensis*). As the identity of this bird with *C. affinis,* J. E. Gray, of India seems to be admitted, the description of the nests of this species in India given by Dr. Jerdon is of some interest: and I cannot but suspect that the curious parasitical habit, of which so unquestionable an example came under our notice near the plain of Gennesaret, as already recorded by me, where the Swift dislodged from their newly built nest a pair of the Rufous Swallow (*Hirundo rufula*), may explain the strange variation in Swifts' nests spoken of by Dr. Jerdon (Birds of India, i. p. 178). Of the hundreds of original nests which I saw, and three of which are now before me, not one had any mud in its composition; and in the case to which I have referred, the Swifts had added a nest, *not of mud*, but of agglutinated straw and feathers, to the original structure of the Swallows. All our Swifts' nests were remarkably light, though those built outside caves were stronger and stouter than those within. May not the Indian bird very commonly adapt the labours of other species to its own purposes, and have thus caused Adams and Layard to speak of its nest as of mud and solid? Theobald's description exactly corresponds with our own experience of the constructions of the Palestine bird.

Cypselus melba, though very abundant in localities, is rather a local bird in the Holy Land. Unlike its little congener, it is only a summer migrant, but returns earlier than the common Swift, *C. apus*. The first time we noticed it was at daybreak on February 12th, when, camped outside the walls of Jerusalem, we saw large flocks passing with amazing rapidity, at a great height, towards the north. A few days afterwards we noticed several of these birds among the hills of Benjamin, disporting themselves and often descending near the ground. They were probably preparing to breed in some of the deep ravines which run down towards the Jordan. From that time, throughout the summer, we rarely lost sight for many days together of this noble bird. The Wady Hamam, opening into the plain of Gennesaret, was a favourite resort of large flocks, which bred in fissures of the stupendous cliffs, hopelessly beyond the reach of the most ardent rock-climber and nester. From their habit of selecting chinks under the overhanging ledges, it was impossible, even by the aid of ropes, to reach their holes; and could they have been attained, the pick and chisel must have been applied indefatigably to reach many of the nests. About daybreak they might be seen dashing in long lines with lightning speed down the ravine, and exercising themselves over the plain. At this time in the morning we were able occasionally to secure a specimen; but very soon they began to rise higher and higher, mingled with numbers of the two other species, till in the depth of that dark, blue cloudless sky they were at last lost even to the keenest sight. Towards evening they began again to descend, and would fly lower than either of their associates, sometimes sweeping close to the ground—a habit which we never observed in *C. abyssinicus*. They would dash past us with bewildering swiftness. The sharp, grating sound of the whirr of their wings struck the ear for a moment; but the eye could scarcely follow them. However, as their flight was always remarkably straight, we were able to secure several specimens as they passed us. The motion of their long sharp wings was scarcely perceptible. Dr. Jerdon says that the flight of this Swift, though elegant and rapid, is not nearly so powerful as that of the two Spine-tailed species. If so, the speed of these latter must be a considerable improvement on the "greased lightning" of American imagination. Near Safed we found a colony breeding in a much more accessible position, evidently having young in the middle of May. We obtained several specimens, but had neither time nor appliances to attempt their nests.

Once only did we find this Swift breeding near the ground and in an accessible position, and then we had the vexation of actually touching the eggs without being able to take them. On the 2nd of May we had climbed to the summit of Jebel Jilad (Mount Gilead), overlooking the deep Jordan valley from the east side, one of the grandest panoramic views in Palestine. After standing for some time on a projecting platform of rock which forms the western brow of the mountain, we descended to examine the face of the cliff, and discovered three large and partly artificial caves immediately below us. They were a mass of fossilized ammonites; and while hammering away at these in one of the caves, out flew two Alpine Swifts, whose nest we soon discovered in a crevice about six feet above the floor of the cavern. The chink, which was about three inches in perpendicular diameter, was contracted by a plastering of very hard mud, which cost us some labour to work out. Inside, the cavity enlarged as it descended; and after scooping away the clay and portions of the rock with a small hammer, I was at length able to touch the two eggs with the tips of my fingers. Anything for a scoop! A kingdom for a spoon! But in vain; and when we went up again to search for an available stick, we found our companions gone and out of sight in the forest. Grievous as was the disappointment, it would have been yet worse to be benighted in that wild and lawless region; and there was nothing for it but, while daylight served, to mount and follow the track of the horses as rapidly as we might. We never again met with an accessible nest. Indeed this was the only instance in which we observed *C. melba* breeding not in large colonies. Their roosting-places are few; but what matters this to a bird which can traverse the whole extent of the Holy Land in an hour? The bird does not appear to resort much to Hermon or the Lebanon, preferring the far more precipitous though lower cliffs which line the ravines running down to the Ghor. One other nesting-place we noticed, in a spot certainly selected with a view to the picturesque. Just above Afka (Aphek), where the ground is strewn with the marble shafts of the famed temple of Venus at Adonis, the classic stream of the Adonis bursts, full-grown at birth, in a prodigious volume, from the foot of a shallow cave under a lofty precipice. Here on the 18th June a colony of Alpine Swifts were busily engaged in feeding their young.

The scream of this bird is much louder than that of the Common Swift, and quite as harsh—very different from the note of the Galilean. It appears less reluctant than the common species to descend near the ground. It was interesting to observe how rapidly the larger bird used to distance the others when the three species were disporting in mid-air together, and how a few of the giants would wheel and double backwards and forwards among a somewhat crowded flock of the little *C. abyssinicus* and yet never part company from them for any distance. Palestine must be nearly the centre of its distribution, as it ranges from Morocco and Gibraltar to the Himalayahs and Southern India. It has not been noticed in China.

Cypselus apus is the last to return to Palestine in the spring. The first we shot was on the plain of Gennesaret on April 2nd, out of a large flock chiefly composed of the other two species. Yet we had observed a few lingering near Beyrout in November. During the breeding-season it is far more generally distributed than its congeners, but affects less the rocky and desolate ravines.

About most of the towns it is found in prodigious swarms. In Jerusalem especially, countless numbers congregate, and sweep and dash close to the ground in the more open spaces within the city like a swarm of flies, building in all parts of the walls and public edifices. It was equally abundant in the north, but it breeds late. We obtained a considerable number of eggs fresh in the beginning of June in the towns at the northern base of Hermon, and while on the summit of that mountain saw many Common Swifts playing overhead almost out of sight, unaccompanied by the larger species. While its northern and western range extends beyond that of the other, it appears more limited towards the south-east, not extending south or east of the Himalayahs.

Among the earliest of the Fissirostral migrants to return was the Hoopoe (*Upupa epops*), the first of which we saw in Bashan at Um Keis, the ancient Gadara, on March 11th, in the same place in which, on the same day, we noticed the last Merlin of the season. Though appearing about the same time as the Roller and Bee-eater, I never saw it in company with them, nor could we detect it on its migration. It probably selects the night for its passage, as seems to be especially the case with those birds which do not ordinarily exercise powers of sustained flight. While we observed large flocks of some other migrants, which did not at once separate, but gradually dispersed themselves over the country, after noisily recalling the incidents of their journey and holding long conference for one or two evenings in some favourite common roosting-place, the quiet and retiring Hoopoe simultaneously appeared all over the country, in small parties, or as frequently merely in pairs. It never flies high, but gently steals from tree to tree—when at ease, with the wavy flapping of an Owl, or, when alarmed, with the more suddenly jerking flight of a Woodpecker. Without being gregarious, it is a sociable bird, and one seldom finds one pair without others in its immediate neighbourhood. I noticed the same habit in the oases of the Sahara, where great numbers of Hoopoes remain throughout the winter, not in flocks but in small parties distributed among the gardens and palm-groves, or even the yards of the houses, and, when once they have chosen a location, adhering to it as faithfully as a Robin Redbreast to its domain in an English garden. Neither in summer nor winter does it shun the neighbourhood of man. In Palestine it prefers the woods, but watered gardens like those of Nablous or Tyre are particularly attractive; and the veneration with which it is regarded by the Mussulman secures it from molestation, unless from the uncircumcised cats. It is very scarce in the Ghor, becoming more abundant in the neighbourhood of Tabor and Carmel than further south, and not ascending very high in the Lebanon range. Whole volumes have been written by Arab scribes on the medicinal virtues of the Hoopoe, or '*hudhud*;' and it is universally held by the Bedouins to be inhabited by the spirits of the departed.

Forskäl remarks that the Hoopoe is found only on its passage in spring and autumn at Constantinople; and in Syria also a large proportion of those which arrive disappear after refreshing themselves for a few days. I do not know of any bird so easily amenable to shot as the Hoopoe. A stray pellet striking it in by no means a vital part will bring it down at once; and at the same time, as all collectors know, it is the most tender of European birds to skin. We did not ourselves find the nest in Syria; but I have seen eggs taken there by others.

The Bee-eater (*Merops apiaster*) and the Roller (*Coracias garrula*) reappeared simultaneously, but, unlike the Hoopoe, in large flocks, which very gradually dispersed in the case of the Roller, while the Bee-eaters remain more or less gregarious throughout the summer. The first time we obtained specimens of either was on the 4th of April, in the plain of Bethshean, to the east of Mount Tabor. On the 12th of April I reached Ain Sultan (Jericho) alone, and remained there in solitude for several days, during which I had many opportunities of observing the grotesque habits of the Roller. For several successive evenings great flocks of Rollers mustered shortly before sunset on some *dôm* trees near the fountain, with all the noise, but without the decorum, of rooks. After a volley of discordant screams, from the sound of which it derives its Arabic trivial name of "schurkrak," شرقراق a few of the birds would start from their perch, and commence a series of somersaults overhead, somewhat after the fashion of Tumbler-Pigeons. In a moment or two they would be followed by the whole flock, and these gambols would be repeated for a dozen times or more. In about a week the immigrants dispersed; but a large number, some twenty or thirty pairs, took up their abode in the mouth of the gorge of the Wady Kelt, where they began at once to excavate the bank for their nests. After this dispersal not a Roller ever came back to the *dôm* trees where they had roosted at first, though scarcely more than a mile distant from the new settlement. The Wady Kelt was the only place where I met with what could strictly be termed a colony; elsewhere the Roller was distributed in pairs, but not restricted to any one character of country, nor to any special breeding-places. The neighbourhood of villages, especially where there were ruined churches and mosques, were sure to be enlivened by its brilliant plumage and sprightly presence. It frequents the whole extent of the Ghor, where the *Scarabæi* and other sand-beetles supply it with abundance of food; it is scattered through the whole of the wooded country and forests of Galilee and Eastern Gilead, and especially abounds in open plains with a few clumps of trees, like that of Gennesaret. Everywhere it takes its perch on some conspicuous outstanding branch, or on the top of a rock where it can see and be seen. The bare tops of the fig-trees, before they put forth their leaves, are, in the cultivated terraces, a particularly favourite resort. In the barren Ghor I have often watched it perched unconcernedly on a knob of gravel or marl in the plain, watching apparently for the emergence of beetles from the sand. Elsewhere I have not seen it settle on the ground. Like Europeans in the East, it can make itself happy without chairs and tables in the Desert, but prefers a comfortable easy chair when it is to be found. Its nest I have seen in ruins, in holes in rocks, in burrows in steep sand cliffs, but far more generally in hollow trees. The colony in the Wady Kelt used burrows excavated by themselves; and many a hole did they relinquish, owing to the difficulty of working it. But so cunningly were the nests placed under a crumbling treacherous ledge, overhanging a chasm of perhaps one or two hundred feet, that we were completely foiled in our siege. We obtained a nest of six eggs, quite fresh, in a hollow tree in Bashan, near Gadara, on the 6th of May. It is noticed by Russell among the birds of Aleppo.

The Bee-eater (*Merops apiaster*), though far more numerous in individuals than the Roller, is less universally distributed, living, however, in large societies in every part of the country. Unlike its smaller congener *Merops viridis*, it does not frequently perch, but remains for hours on the wing, skimming, swallow-like, up and down a nullah or wady, or systematically ranging and quartering a barley plain in pursuit of insects on the wing. Seen athwart the sunbeams as they pass overhead, their colour has the appearance of burnished copper. They feed as well as breed in colonies, preferring low banks to the steeper declivities, and seeming to rely for protection against lizards and other enemies on the structure and turnings of their dwellings rather than on their position. I have taken the eggs from a nest in the side of a mere low sand mound on the plain, out of which I startled the bird by riding over its hole.

The Bee-eater does not, so far as I can ascertain, utilize the borings of the previous year; whether from the number of parasitic insects it leaves behind, or from the fact that the lizards generally squat in the vacant dwellings, I cannot say. Some authors have stated that it lines its nest with the elytra and legs of beetles. This I conceive is quite a mistake, and to be classed with the similar error respecting our Kingfisher applying fishbones to the same purpose. When the eggs are first laid, there are no insect-remains to be found; but as the female continues to sit, the *débris* of her meals becomes heaped around her, and in old nests one might generally fill a quart pot with the elytra of the Coleoptera on which the young have been reared. There is an excellent description of its nesting-habits by Mr. Salvin (Ibis, 1859, p. 303), to which I have nothing to add. It is called ورور "warwar" by the natives, from its cry, and is mentioned by Russell as being considered delicate eating by the Syrians.

Our Palestine experience will not throw much light on the habits of the two other species which occur there; for *Merops ægyptius*, Forsk., was not found by me during this expedition (though I shot it in the Jordan valley in 1858), and Mr. Cochrane was the only one of my friends who saw it this time: he fell in with a small flock near Hebron. *Merops viridis*, L., also occurs but rarely. It was shot by Mr. Herschell on the banks of the Jordan, but we were not so fortunate. Jerdon distinguishes the Egyptian bird, the *M. viridis* of Rüpp., from the Indian *M. viridis* of Linnæus. If they are distinct, the Palestine bird must be the Egyptian species. It is there very common, and, unlike the *Merops apiaster*, is a permanent resident. Probably, had not our explorations been rudely interrupted on the east side of the Dead Sea, we should have found it in the Safieh. All three species have a wide lateral range, but none of them appear to extend into China.

The only remaining group of the Fissirostral birds is that of the Kingfishers, of which the Holy Land supplies us with three species, all permanent residents. Of these, our own little gem, *Alcedo ispida*, is scattered everywhere throughout the country wherever there are streams, and also along the Mediterranean coasts; but it is nowhere very abundant, though evidently unaffected by climate, fishing indifferently in the little torrents of the Lebanon, among the ruined columns of Tyre, or in the seething swamps of the Jordan valley. All three species resort to the shores of the Dead Sea, attracted by the shoals of fishes which are brought down by the freshwater streams and soon stupified by the brine of the lake. One morning, on the western side, Mr. Shepherd shot all three species within a few minutes of each other. Generally, however, we met with *A. ispida* in more secluded localities and on the banks of smaller streams than the others, and even in ditches. In the Lebanon it is the only species.

The Black-and-white Kingfisher, *Ceryle rudis* (Linnæus), is the commonest and most conspicuous species in the country. We first saw it on the seashore in winter, when, in the months of November and December, immense numbers resort to the sea-coast. They were particularly abundant about Tyre and Sidon, and all the way to Mount Carmel, fringing the shore, and hovering by dozens over the sea about a hundred yards from land, and occasionally perching with loud cries on an outlying rock. At this time they were very wary, and cost us much trouble to procure. During the most stormy gales of winter they continued, regardless of the weather, to hover over the breakers, ever and anon dashing down into the surf, and apparently diving to the bottom for their prey. Their flight and actions reminded us very much of the Kestrel. After rising with a somewhat jerking flight, they would poise themselves for several minutes with a gentle quiver of the wing, and then suddenly drop perpendicularly, beak foremost, for a header, or else glide swiftly onwards to take up another aërial post of observation. They are at all times of the year gregarious in small bands. A few bred near the Jordan, in the banks of the Wady Kelt; but the great breeding-place which we discovered was on the plain of Gennesaret, in the banks of the Ain Mudawarah. Here there was a colony of about thirty pairs, only a small proportion, however, of the birds of this species which feed on the teeming myriads of fishes in the hallowed lake. They selected a different part of the bank, and built in a different position from *Halcyon smyrnensis*. Shortly before its entrance into the lake, the Mudawarah forms a hollow secluded pool, with steep banks of mud about twenty feet high above the water, which may have a depth of ten or twelve feet. The sides of this little amphitheatre were perforated all round by the holes of the Great Kingfisher, but all of them close to the water edge, about four inches above it. Here on the 28th of April Mr. Bartlett took two nests, of six and four eggs respectively. I revisited the locality on the 21st and 22nd of May and found great numbers of young birds fledged and able to fish for themselves, while some nests contained from four to six young; but I still secured five nests with fresh eggs in each. The only way of securing them was to strip and swim to the bank, while an Arab threw down a rope from above, which I fastened round my waist while he held the other end; and thus suspended in the pleasant tepid bath, I dug away with the mattock let down to me till the eggs were reached.

The passages were about three feet and a quarter in length, and the chamber at the end was simply scooped at one side of the passage, not turned at a sharp angle, nor double, like that of the Bee-eater. In one instance I had dug long and laboriously, when out dashed a great rat instead of a Kingfisher, leaving her six naked young to their fate. In no instance were there any fish-bones with the eggs, though, when there were young, there was a festering heap of bones and decaying filth. But there was always an abundantly heaped nest of grass and weeds. In one nest, which had been visited and robbed by Mr. Bartlett, there was a family of three unfledged young; so that the bird must have laid again almost immediately in the same digging. The whole colony sat about on the oleanders, or passed and repassed incessantly, during my operations, screaming and shrieking at the intruder most vociferously. The eggs of this species vary in shape more than those of any other Kingfisher with which I am acquainted. Though generally almost spherical, those of two nests we captured were decidedly elongated, in one case much more so than in the other; and the peculiarity was common to the whole sitting in each case. Some confusion has arisen in the nomenclature of this bird, from Swainson, in his 'Birds of West Africa' (vol. ii. p. 95), having described the male bird as distinct, under the name of *Ispida bicincta.* The fact is, that the adult male always has the *second* narrow belt of black across the chest. Degland, on the contrary, attributes this second belt to the female. I preserved twenty-one specimens, and many were collected by others of the party. In all, the sex was carefully noted, and the rule held good of the male having a second band, which was always wanting in the female and young bird. The young, before its first moult, has many of the feathers on the throat and breast, both above and below the band, delicately tipped with a slaty-black crescent-shaped mark. The range of *Ceryle rudis* is most extensive, from Western Africa and the Cape of Good Hope to the furthest parts of China and Japan. It is evidently the bird intended by Russell, in his 'Natural History of Aleppo,' under the name of *Alcedo alcyon,* var. γ, and was first described by Hasselquist.

Halcyon smyrnensis, L., is also noted by Russell in his 'Natural History of Aleppo,' but for a century since his time it appears to have eluded the observation of naturalists, until rediscovered by Captain Graves and reported in an interesting paper by Mr. Strickland (Ann. Nat. Hist. vol. ix. p. 441). It has been imagined that the Indian bird, called by Boddaert *H. fuscus,* was distinct; but Strickland has very clearly shown their identity, and the mistake in Jerdon's 'Birds of India' has been corrected in the list of errata to his first volume.

Although with a very wide range, this Kingfisher is strictly Asiatic, being only a doubtful straggler to Europe, and never reported from Africa. Its habits in the Holy Land show it to be much more strictly tropical than the last species. We never found it beyond the limits of the Jordan valley; but Russell's mention of it, as well as its existence in Asia Minor, show that it is not exclusively tropical in its habitat. Unlike the other peculiar species of the Ghor, it occurs throughout the whole course of the river, and we met with it close to Banias, on the upper waters of the Jordan. It is in all its habits very different from the lively Pied Kingfisher. It never hovers, never is seen in the open ground, but loves to sit moodily for hours on a slender bough overhanging a swamp or pool, where the foliage helps to conceal its brilliant plumage, and where, with cast-down eyes and bill leaning on its breast, its seems benumbed or sleepy, until the motions of some lizard or frog in the marsh beneath rouse it to temporary activity. When disturbed, it rather slinks away under the cover of the overhanging oleanders than trusts for safety to direct flight. Nor does it confine itself to ponds or marshes; but frequently it will perch on a bush in a barley-field watching for lizards or snakes, and always bringing its prey back to its perch to devour at its leisure. It will swallow entire very large reptiles. In one I found a snake eighteen inches long, entire; but I never found in its crop any fish, though it had frequently fed on locusts—most generally, however, on reptiles, whether frogs, toads, lizards, or serpents. It is not gregarious, and we seldom saw more than two together. It is both sedentary and sluggish in its habits, though very wary.

The first specimens we obtained were at Jericho, in January, where it resorted to the jujube-trees overhanging the stream from Ain Sultan (Elisha's fountain). Afterwards we met with it all round the coast of the Dead Sea, by the banks of Jordan in thickets, in the swamps of Huleh (Merom), by the upper Jordan, but especially on the plain of Gennesaret, where, on April 28th, Mr. Bartlett took a nest of five eggs, fresh, in a hole in a bank about six feet high, facing, not a stream, but the lake itself.

On the 23rd of May I took a nest of four eggs, slightly incubated, in a bank by the stream Mudawarah, about half a mile above the colony of *C. rudis.* The nest was at the end of a tunnel, not more than 2 feet in, and directly facing the entrance, with a very few straws for lining. The entrance was about six inches above the level of the water, and in a deep, sluggish part of the stream. The eggs were nearly spherical, and considerably larger than those of *C. rudis.*

VII.—*Notes on the Birds of the Azores.* By FREDERICK DU CANE GODMAN, F.L.S., F.Z.S., &c.

(Plate III.)

ON the 13th of March, 1865, the Brazilian mail-steamer 'Oneida' landed my brother, Captain Godman, and myself at Lisbon. Here we found the 'Leal,' a small screw-steamer, about to start for the Azores; she runs with more or less regularity once a month, and, calling at five of the principal islands, returns direct to Lisbon. We took our passage in her to St. Michael's, and, after a rough voyage of six days, were glad to find ourselves at daybreak on the 21st at anchor in the roadstead of Ponta Delgada, the capital of that island.

The gales which had followed us on our voyage were now succeeded by a perfect calm, leaving, however, heavy clouds resting on the tops of the higher mountains, which, together with the dark foliage of the orange-trees and native evergreens, gave the island a particularly gloomy appearance.

There were about a dozen English schooners anchored off the town, waiting for cargoes of oranges; and two more at a short distance out at sea were trying to come in, on board one of which was my collector, Mr. Brewer. He also had experienced heavy weather, but on the whole had had a fairly prosperous voyage of a fortnight from London.

The Azores lie between long. 25° and 31° 15′ W., and the most eastern islands are 16° west of Lisbon. They are nine in number, and may be divided into three groups,—St. Michael's and St. Mary's forming the eastern; Terceira, Graciosa, St. George's, Pico, and Fayal the central; Flores and Corvo the extreme western. They have an aggregate area of 700 square miles, and are of volcanic origin. St. Michael's, the largest and, from its trade in oranges, to us the best-known, has a population of 80,000 inhabitants. It stretches nearly east and west, being much longer than it is broad. At the eastern end the mountains rise to a height of upwards of 3500 feet, and are chiefly covered with tree-heath (*Erica azorica*), juniper (*Juniperus oxycedrus*), faya (*Myrica faya*), and other evergreen shrubs. The peak of Agua de Poa in the centre reaches a height of 3070 feet; between this and the west end the land is lower, but is still studded with numerous small volcanic cones, all of which bear traces of extinct craters at their summits. At the extreme western end, again, the mountains rise to nearly 3000 feet. The coast is steep and and rocky, and in some places the cliffs are 1400 feet high.

There are several lakes in the mountains, formed for the most part by an accumulation of water in the extinct craters; the principal are the Lagoa Grande, in the Caldeira das Sete Cidades, the Lagoa do Fogo, and the Lagoa das Furnas. Gold-fish (*Cyprinus auratus*), which have been introduced into these lakes, are extremely abundant, and attract considerable numbers of Gulls and Terns.

My brother had but a short time in St. Michael's, as he was obliged to return to England to join his regiment. I remained there rather more than a month, during which time I visited different parts of the island, and collected specimens of most of the resident species of birds. My headquarters were at the hotel in Ponta Delgada, a very comfortable house, and having the advantage of a most obliging English landlady.

We next went to Fayal, and thence visited the two most western islands. We left St. Michael's on the evening of the 21st of April, and at six o'clock next morning anchored in the harbour off Angra, the capital of Terceira. We passed the whole day on shore, as the steamer did not start again till night. This was the first really warm day we had had; and we made a long excursion into the interior. The scenery is not nearly so pretty as that of St. Michael's, which of its kind is not surpassed by any I have seen elsewhere. We returned on board in the evening, and at night the steamer again started for Graciosa, which we reached at six next morning. This is one of the smallest of the Azores, and is very pretty; but as we only remained there about an hour, and anchored at a considerable distance from the shore, we did not land. We next proceeded to St. George's, and, passing close round under the high cliffs at the west end, called at Villa das Velas, on the south side, to land two or three passengers and a small amount of cargo.

Whilst coasting along this island we observed large flocks of "Cargaras," "Stapagados," "Garças," and "Pombas," evidently congregating for the breeding-season; and, judging from the rugged and precipitous rocks they had chosen for this purpose, I fancy they would run little risk of being disturbed. The south side of St. George's rises almost perpendicularly from the sea, but the inhabitants have nevertheless found sufficient space on some of the ledges of the rocks to plant vineyards. To many of these there is no approach from the land side, and the only means of getting at them is by landing from a boat and climbing on hands and knees up the almost perpendicular cliffs—which of course can only be done in fine weather with a calm sea.

From Villa das Velas to Horta, the capital of Fayal, is about forty miles; but as we did not arrive there till past eleven o'clock at night, we remained on board till next morning. Fayal is a charming little island; and the view from it of Pico, with its snowy top peeping out from the clouds (as we then occasionally saw it), is really a grand sight. Pico is more thickly wooded than most of the islands; the volcano rises to 7600 feet in height, and in the winter the extreme cone is frequently covered with a thin layer of snow. Descending lower, there is first a belt of cinders and but little vegetation except lichens; lower down again, the tree heath and coarse grass form another belt; while below this is a dense growth of brushwood, consisting of laurustinus, faya, and other evergreen trees. This is the home of the Wood-Pigeon in the Azores. In most of the other islands this bird is much persecuted, on account of its being greatly esteemed for the table, and it is consequently very scarce and wild; while here it is abundant, being comparatively undisturbed. Towards the coast, at the foot of the mountain, a network of walls encloses small vineyards to protect them against the winds. From these vineyards was formerly made the well-known "Pico Madeira;" but for the last twelve years, in consequence of the vine-disease, they have yielded no fruit, causing a great loss to the poor inhabitants.

Whilst at Fayal, Mr. Dabney, the United States' Consul, kindly interested himself in assisting us to obtain a passage in a whaling vessel to Flores, an opportunity of which I gladly availed myself, the communication being very irregular and uncertain; in fact, during the previous winter, Corvo and Flores had been for five months without any communication with other places.

Mr. Brewer and I went on board the barque 'Henry Tarbert,' and, having a favourable breeze, in sixteen hours we sighted the south point of Flores; but on approaching the shore we found too heavy a surf to allow us to land; so we were obliged to cruise off and on, for three days more, till the swell had in some measure subsided. The sea being calmer, though a heavy surf was still rolling on the rocky shore, the captain ordered one of the whale-boats to be lowered and manned. We got into it with our baggage, and rowed in as near the rocks as we could, taking care to keep just outside the breakers. Numbers of people on land had been watching us; and as soon as they perceived that we intended to land, they flocked down to the shore, and completely lined the rocks. There were probably not less than three or four hundred persons. They beckoned to us to run our boat in behind a certain rock which they pointed out; but as the sea broke heavily upon it and appeared to dash all over it, our captain would not venture with his slight whale-boat, and signalled to them to send us off a boat to show us the way. This after some time they did; and a nasty landing it was. The boatmen, who certainly managed their craft very well, came out to us, and with some difficulty we got into their boat; then watching their opportunity, and following as close as possible after a huge breaker, they shot the boat round the corner of a rock into a small creek, which was a little sheltered from the full violence of the surf. We now had to jump out, which would have been no easy matter without the assistance of those on the rocks, who, as the swell of the waves raised our boat some eight or ten feet, made a snatch at us, and we were all three pulled safely on shore. This was at Largens, a small town at the south point of the island; and from the ship it appeared the most sheltered spot we could find; but it was several miles distant from Sta. Cruz, the village we wanted to go to, and where we had letters of introduction to Dr. Mackay, H.B.M. Consul. My first idea was, that when once safely landed I should have no more boating; but this notion I was obliged to give up; for, on inquiry, I found the way by land was very bad and circuitous and that no beasts could be procured. More than this, the track being in many places along the ledge of the cliff overhanging the sea, I felt sure that my companion, who had not a good head for such places, would be unable to pass, even if I could do so.

After not a little bargaining, we agreed with some boatmen to row us to Sta. Cruz, in a large boat with eight oarsmen, the distance by water being about sixteen miles. Having transferred all our luggage to our new craft, and wished our late captain farewell, we started, keeping as near the shore as the breakers would allow. Sometimes we were on the crest of the wave, within a few feet of where it was actually breaking, and almost the moment we were over it the whole line of it where we had passed broke with a fearful roar behind us. Had the boatmen misjudged their distance once, nothing could have saved us. They certainly understand what they are about, but the way they do things is not such as to inspire strangers with confidence. When a larger and more ugly wave than usual comes, all talk at once, and each man gives his opinion as to what ought to be done, instead of obeying the master; and they will as soon listen to a boy of twelve years of age as to an old and experienced seaman. We reached Sta. Cruz in about four hours, but at first it was uncertain whether we could land here; however, some of the crew said we could, and, after watching our opportunity much in the same way as we did at Largens, the boat was run ashore behind the rocks. We proceeded at once to Mr. Mackay's house, accompanied by a large number of the inhabitants, and he soon found us a comfortable lodging in the town. Flores is much better watered than most of the islands, but less of the land is cultivated. In the mountains are several lakes and a large swamp nearly two miles long by a mile broad, where I found Ducks, Teal, and Snipes breeding, though not in great numbers. Woodcocks also are very abundant, as they are little disturbed; in fact scarcely anyone here shoots. I remained in Flores rather more than a fortnight, during which time I walked all round the island, keeping as near the coast as possible; I also made several excursions to the lakes and swamp in the mountains; but, with the exception of the Purple Sandpiper and the Wheatear, of which I shall have more to say presently, I saw no birds I had not observed in the other islands I had visited.

The weather was still rough and uncertain; and as it was scarcely safe to visit Corvo in a small boat, though but sixteen miles from Sta. Cruz, I chartered a schooner of about thirty tons for this purpose, and spent two days on the island. It is a single volcano, containing a large crater with lakes, and rising rapidly from the sea. It has precipitous cliffs on all sides except in one spot, where both the village and landing-place are situated. It is but seldom visited; and after the other islands, there is not much of special interest to the general traveller. I returned again to Flores, and in a day or two afterwards left in the same schooner for Fayal. Here I remained some days, waiting for a favourable opportunity to ascend Pico; but though I made the attempt, the weather, unfortunately, would not admit of it, and I finally left for Terceira, calling at St. George's on my way, with some regret at not being able to accomplish this object. I spent a fortnight more here, and returned by the next steamer to Lisbon, waiting three days at St. Michael's on my way, just time enough to get my collection together, and wish my friends good-bye. Thence sending most of my things direct home, I made a short tour through Portugal, and then returned to England.

The following is a list of birds collected or observed during my visit: those marked with a dagger (†) I believe to be stragglers; the rest are residents.

†TINNUNCULUS ALAUDARIUS, G. R. Gray.

I obtained a single specimen of this species through Mr. G.

Brown, of St. Michael's, who kindly preserved it for me. It is not a resident in the Azores, though in Madeira Mr. Vernon-Harcourt says it is very common*.

BUTEO VULGARIS, Bechstein. "Milhavre."

Very common in the eastern and central groups, but scarcely ever seen in Flores or Corvo. I found a pair building in a cliff near the sea on the 22nd of March, in St. Michael's, and shot both the old birds. Mr. Gurney, who has kindly examined them for me, says that they are unusually rufous on the under parts of the body, and that they consequently bear a considerable resemblance to the immature dress of the ordinary Buzzard of Barbary, *Buteo desertorum* (Daudin). In size, however, they agree with *B. vulgaris*, which is rather the larger bird of the two. In the Azores Buzzards are by no means shy, and may constantly be seen hovering over the towns or perching in the orange-gardens. They feed chiefly on young rabbits, rats, and mice, of which there is a great abundance. It is from this bird the islands take the name of Azores†.

ASIO OTUS (Linnæus).

Only a single example of this species came under my notice. Mr. Dabney procured it in Fayal during my absence in Flores, and kindly had it preserved for me. It was a very young bird, and was brought to him by a boy who took it from the nest. I had frequently heard of it in St. Michael's; but it is nowhere common, and I never met with it living.

STRIX FLAMMEA, Linnæus. "Coruja."

Occasionally met with in the eastern and central groups. In Flores and Corvo I did not find anyone who either knew the bird or the Portuguese name for it; hence I conclude it does not extend to these outer islands. Several people in St. Michael's and Terceira told me they had seen it, but I was unable to procure a specimen. The captain of a whaling-vessel told me that one flew on board his ship when about 500 miles S.W. of the

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* See "Notes on the Ornithology of Madeira" in Annals and Magazine of Natural History, 2nd ser. vol. xv. pp. 430–438.

† Açor, in Portuguese, is properly the Kite (*Milvus ictinus*), for which species no doubt the early explorers mistook this bird.

Azores. It was much exhausted, but he kept it alive on salt pork for three or four days.

TURDUS MERULA, Linnæus. "Melro."

Frequents the mountain-districts rather than the gardens and low country. It is very common, but shy. The note always struck me as harsher and louder than our Blackbird's, but I find no difference in the size or form of the two birds.

†ORIOLUS GALBULA, Linnæus.

Whilst I was in Flores a bird I believe to have been of this species was caught and killed by some boys, who plucked all its feathers out and threw it away. I did not hear of it till the following day, when I went immediately to the village, but could procure no more than its tail- and wing-feathers, from which, together with the description I received, I do not hesitate to attribute it to this species.

ERYTHACUS RUBECULA (Linnæus). "Avinagreira."

Though common in the eastern and central groups, the Redbreast does not occur in the two western islands. Through the kindness of some of my friends I have been able to compare my specimens with examples from Algeria, Tunis, and Southern Italy, with which I find that they exactly agree in their light-coloured plumage. Mr. Gould showed me one he shot in Teneriffe, which is precisely similar to our British and darker form.

SYLVIA ATRICAPILLA (Linnæus). "Toutinegro."

Abundant in the lower lands throughout the islands. A curious variety is not unfrequently met with, having the black marking on the head extending to the shoulders and round under the throat. I only saw one individual, which was in a cage with a common Blackcap. It appeared to be slightly larger, though in other respects the same, with the exception, of course, of the dark markings. I was told that some individuals have the whole of the under parts of the body black. The story current in the Azores with regard to them is, that, when the parent lays more than four eggs, one bird always proves to be this variety*. In Fayal it is known by the name "Avinagreira," a term given to the Redbreast in St. Michael's. It is much prized by the Portuguese, who are fond of keeping it as a cage-bird.

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* [This variety is doubtless the same as that mentioned by Heineken

REGULUS CRISTATUS (Linnæus). "Estrellinha."

Frequents chiefly the junipers (*Juniperus oxycedrus*) and tree heaths (*Erica azorica*) in the mountains, and is but seldom seen in the gardens or lower country. I have compared my examples with British and South European specimens, and find that the former are rather stouter and stronger in the beak and legs, and also somewhat longer in the tail. Mr. Gould showed me a Golden-crested Wren from Eastern Asia which agrees with my Azorean bird in all respects.

SAXICOLA ŒNANTHE (Linnæus).

I shot a single example of the Wheatear in Flores, after a strong gale of wind, and I at first believed it was a straggler from the continent; but I afterwards found four or five pairs in the old crater on Corvo, which had bred there, as I saw young birds that could scarcely fly. The inhabitants have no name for this bird, and I did not meet with any one who knew it; so I believe it to be a recent settler.

MOTACILLA SULPHUREA, Bechstein. "Alveola" or "Lavandiera."

Common, wherever there is water, throughout all the islands. I have compared it with European specimens, with which it agrees well, with the exception of the tail being rather shorter. Mr. Gould, however, showed me some examples from Eastern Asia which in this respect are exactly the same as the Azorean bird. It is resident the whole year.

†PLECTROPHANES NIVALIS (Linnæus).

A flock of about twenty of these birds appeared last winter in the island of Corvo. They were said to have been much exhausted when they arrived, and several were caught and kept

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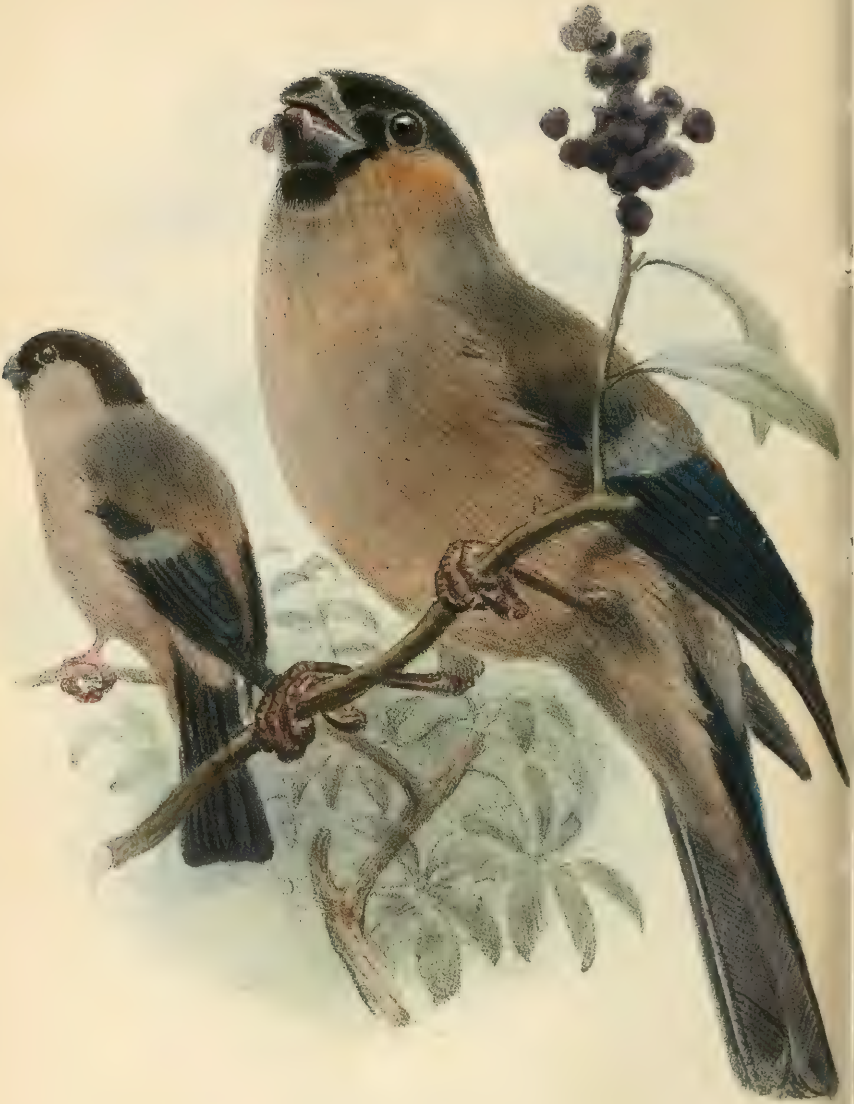
(Zool. Journ. v. pp. 75–79) as occurring in Madeira, where a similar story is also told concerning its origin. It was subsequently described by Sir W. Jardine (Edinb. Journ. Nat. & Geog. Science, Jan. 1830, i. p. 243), and figured by him and Mr. Selby in their 'Illustrations of Ornithology,' pl. 94, under the name of *Curruca heinekeni.*—ED.]

Ibis 1866, Pl.



J Wolf del, et lith

M & N Hanhart

PYRRHULA MURINA

in cages. At the time I was there I believe there was but one living, and this was a female. The owner had such an exalted notion of its value that I did not procure it, but contented myself by making a coloured drawing of it.

FRINGILLA MORELETI, Pucheran. "Tintilhão."

First brought from the Azores by M. Morelet in 1857, and named by M. Pucheran after its discoverer. It is the representative of our Chaffinch (*F. cœlebs*), whose habits it much resembles. From the description, it must be exceedingly like *F. tintillon* of Webb and Berthelot from the Canaries, but at present I have not been able to get a specimen of this latter bird for comparison. Its nearest continental ally seems to be the Algerian *F. spodiogena*, Bonaparte, from which, however, it differs considerably. It is distributed throughout all the islands of the archipelago, and is very common. Its nest is built of moss, lined with wool, and is not so neatly made as that of our Chaffinch. It lays four or five eggs, marked with brown spots, like those of *F. cœlebs*, but rather larger.

PYRRHULA MURINA, sp. nov. "Prior." (Plate III.)

Major; subtus murinus, uropygio cinereo, rostro pedibusque validissimis.

♂. Capite toto ad nucham et mento, alis caudaque nigris, purpurascente tinctis, his nitentioribus; dorso et corpore toto subtus murinis, illo obscuriore, ventre medio vix aurantiaco tincto, tectricibus minoribus et fascia alari cum uropygio cinereis, hoc paulo dilutiore; macula alari ferruginea ut in aliis hujus generis speciebus.

♀. Mari omnio similis, sed pectore magis cinereo, et colore aurantiaco carente.

Long. tot. 6·5, alæ 3·4, caudæ 3, tarsi ·8, dig. med. ·9, ung. ·25, poll. angl.

Hab. Ins. Scti. Michaelis, Azorensi.

Synon. *Pyrrhula coccinea*, Pucheran, '*l'Institut*,' No. 1310, Feb. 9, 1859; *Rev. Zool.* 1859, p. 413 (*minime* De Sélys-Longchamps, *Faun. Belg.* p. 79, *nec* auctt. cætt.).

M. Morelet brought away but one specimen of this bird from the Azores, and M. Pucheran refers it to *P. coccinea* of De Sélys-Longchamps*, the female of which it somewhat resembles; but it is entirely different in appearance from the male to that species, not having the red breast or white rump, which last character is also shared by the female. It is therefore necessary to confer on the present bird a new name, and I have chosen one which is, I trust, sufficiently expressive, as the accompanying figure will show.

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* *Cf.* 'Ibis,' 1859, p. 322; 1860, p. 93; *et* 1861, p. 401.

In habits the Bullfinch of the Azores resembles our *P. vulgaris,* feeding principally upon insects and the buds of trees. I believe that it is confined to the mountainous parts of St. Michael's, where it is tolerably abundant. It is so tame that it takes but little notice of the report of a gun, and I shot thirteen individuals in the same poplar tree in a few minutes. I know nothing of its breeding-habits, as I was not in the island at the right time of year, and it is difficult to obtain accurate information from the inhabitants.

SERINUS HORTULANUS, Koch. "Canario."

Found in abundance throughout the Azores. It frequents the cultivated lands, where it feeds on the seed-crops, and is especially destructive to the flax. It is by no means a bad songster, and is therefore often caught and tamed, a great many being sold on board vessels which touch at the islands for provisions. In Fayal these birds congregate towards evening in considerable numbers about a small hill near Horta, and fly across in a body to the island of Pico; for what reason I do not know, as there is no want of trees in the neighbourhood. I have compared my specimens with some from Algiers, Tunis, and Sicily. The birds from the Azores are rather darker in plumage, slightly stouter, and have stronger legs and beaks, but there is scarcely difference enough to separate them specifically.

STURNUS VULGARIS, Linnæus. "Esturninho."

Plentiful throughout all the islands of the archipelago. It breeds principally in the sea-cliffs, and is precisely similar to European examples. When vines were more cultivated it was much destroyed, as it was said to feed upon the grapes and to do much mischief in the vineyards; lately, however, it has not been persecuted, and has greatly increased in numbers.

DRYOBATES MINOR (Linnæus). "Picapoa."

This bird is very uncommon, but is occasionally met with in the mountains in St. Michael's, and, I believe, also in Terceira.

I was unable to procure a specimen, and did not meet with it myself. Mr. Brewer tells me that after I left for England he saw one at the Furnas and watched it for some time, and has no doubt as to the species. M. Morelet gives *Picus major* in his list of the Birds of the Azores; but I am not aware that he ever obtained specimens, and I am inclined to think that there is but one species resident.

†UPUPA EPOPS, Linnæus.

I saw a single example in a collection at Terceira. It had been killed in that island some years previously. It has also been met with in St. Michael's.

? COLUMBA PALUMBUS, Linnæus. "Pomba troqual."

As I never succeeded in obtaining a specimen of this bird, I am unable to say whether it is the true *C. palumbus* or the *C. trocaz* of Dr. Heineken (*C. laurivora*, Webb & Berth.). It is only found in the eastern and central groups, and is very rare in St. Michael's. I saw several in Pico, where, being less shot at, it is not so shy. I also saw it in St. George's and Fayal. On the wing, I could observe no difference between it and our European species.

COLUMBA LIVIA, Linnæus. "Pomba da rocha."

Exceedingly common throughout the archipelago. It breeds in great numbers in the rocky cliffs along the coast. Most of my examples are very dark in plumage—so much so, indeed, that the band on the wings is no longer visible. I saw, however, two quite white individuals, but not a single one of the pale grey tint usually found elsewhere. I find that Mr. Vernon-Harcourt mentions a dark variety in Madeira.

CACCABIS RUFA (Linnæus). "Perdix."

I had unfortunately no opportunity of visiting St. Mary's, in the mountains of which the Red-legged Partridge is said to be very abundant. Mr. Brewer, who went there after I left, procured me two examples. They were in very bad plumage, but I believe them to be identical with the *C. rufa* of Europe. It is occasionally found in St. Michael's and Terceira.

COTURNIX COMMUNIS, Bonnaterre. "Cordonix."

Plentiful in the cultivated lands on all the islands, and even in the gardens. It is not migratory here, and is said to have two and sometimes even three nests in the year. It is certainly exceedingly numerous, and affords excellent sport; on one occasion a Portuguese gentleman and I killed 157 in a few hours.

ÆGIALITES CANTIANUS (Latham). "Maçarico."

I met with a few birds of this species about the lakes in St. Michael's; but afterwards found them more plentiful about Capellas, in Fayal, and on the high ground between Angra and Praya, in Terceira. The Portuguese name "Maçarico" or "Maçanico" is applied more or less to all Sandpipers and Snipes, as well as to this species. It breeds in Terceira, as I saw several young birds about, which were unable to fly.

†VANELLUS CRISTATUS, Meyer.

I saw a single stuffed specimen in the collection of a gentleman at Angra. He informed me that it had been shot in Terceira. Mr. Alfred Newton tells me he has a specimen from Madeira.

STREPSILAS INTERPRES (Linnæus).

A few pairs are always to be found about the rocks between Santa Cruz and Ponta Delgada, in Flores. I killed some specimens in June in full breeding-plumage, and I suspect that it must breed on some of the small islands near the coast; but the weather was so stormy all the time I was in Flores, that I was unable to get out to them. It is said to remain there the whole year. I afterwards saw eight birds of this species near Capellas, in Fayal, and I believe a few are to be found on the coast of any of the islands where the rocks provide sufficient protection from the surf.

ARDEA CINEREA, Linnæus. "Garça real."

This is the only resident species of Heron. A few pairs are always to be met with about the lakes in St. Michael's, and occasionally on the coasts of the other islands; but the sea is in most places too deep for them to fish from the shore. I shot a single specimen in St. Michael's, at the Sete Cidades, and saw the remains of an immature bird that had been killed some time previously, which leads me to believe that the species occasionally breeds there, though I could obtain no information as to the fact.

†ARDEA PURPUREA (Linnæus).

†ARDEA ALBA (Linnæus).

†ARDEA GARZETTA (Linnæus).

I saw examples of these three species in a collection in Terceira, said to have been killed in that island.

†ARDETTA MINUTA (Linnæus).

†BOTAURUS STELLARIS (Linnæus).

Also in the same collection. One of the latter species was killed in St. Michael's.

†PLATALEA LEUCORODIA (Linnæus).

A Portuguese gentleman in St. Michael's told me that five or six examples of this species had been shot at Sete Cidades a few years previously.

NUMENIUS ARQUATA (Linnæus). } "Maçanico real."
NUMENIUS PHÆOPUS (Linnæus). }

These two species are occasionally found about the coasts. I saw them both, but I much doubt their breeding there regularly.

SCOLOPAX RUSTICOLA, Linnæus. "Galinhola."

In all the mountain-districts throughout the islands this bird is not uncommon. It breeds, as with us, early in March, as I found young birds in the beginning of April, whilst out rabbit-shooting. The native sportsmen (!) shoot them while flying of an evening. It is most abundant in St. George's, Pico, and Flores, where few people kill them.

GALLINAGO MEDIA, Leach. "Maçanico real.".

A few are occasionally found about the streams and wet places in the mountains. In Flores I saw four or five pairs on a large marsh, where I have no doubt they were breeding, though I did not see a nest. This species is called by the same name as the Curlew and Whimbrel.

TRINGA MARITIMA, Brünnich.

A small flock was usually to be seen in company with some Turnstones about the rocks near Santa Cruz, in Flores. I was told that in summer they are frequently seen upon the rough pasture-land high up in the mountains. The people say they go there to feed in hot weather; but I suspect they breed there as well, since a lad at Santa Cruz told me that he had shot very young birds. No one, however, that I met with could give me any information about their nesting-habits. The only specimen I procured was a male in full summer-plumage, and was shot in June.

†CREX PRATENSIS, Bechstein.

Mr. J. Dabney showed me a stuffed Corn-Crake, which was killed two or three years previously by flying against a window of his house. I also saw another stuffed specimen in a collection in Angra, said to have been killed in Terceira. The distances to which this short-winged bird occasionally wanders are sufficiently remarkable, since it has occurred in the Bermudas, the United States, and even Greenland.

GALLINULA CHLOROPUS (Linnæus).

FULICA ATRA, Linnæus.

Both these species are to be found in St. Michael's, on the Lagoa do Fogo. I believe they were originally introduced into the islands, and I am not aware that they are found in any other locality.

ANAS BOSCHAS, Linnæus. "Patos."

A few are to be found about all the lakes throughout the islands; they are, however, very shy. In Flores I saw several in the mountain-lakes and about the marsh, where they breed. In winter they say that several other kinds of Ducks occur; but I only saw those mentioned in this list.

ANAS CRECCA, Linnæus. "Mareca."

Like the last species a few are found everywhere; and it breeds in Flores, but is not quite so common as *A. boschas*.

? ŒDEMIA NIGRA (Linnæus).

I saw a black Duck on the lake at the Furnas in St. Michael's, which I believe belonged to this species.

†MERGULUS ALLE (Linnæus).

There is a single specimen in the collection of a gentleman in Terceira, which was killed in the island four or five years ago.

STERNA FLUVIATILIS, Naumann. "Carajão."

This and the following species are the only two real migrants in the Azores. The Common Tern comes about the middle of April, and is to be seen in considerable numbers about the sea-coast and mountain-lakes, departing, I was told, about the middle of September. It breeds on the small islands about the sea-coast.

STERNA DOUGALLI, Latham. "Carajão."

Mr. S. Dabney, of Fayal, told me that when he was in Flores, about the year 1855, he shot several Terns with pink breasts. During my visit to that island I kept a sharp look out for them, but did not see any, nor could I find any one amongst the inhabitants who knew the bird, though *S. fluviatilis* was common enough. On my return to Fayal, I one day took a walk to Castello Branco, a large high rock almost detached from the mainland. There were a great many Gulls and Common Terns flying about; and whilst I was watching them as they flew along the side of the cliff, I noticed five or six Roseate Terns amongst them; some of these came within a few yards of me, but I did not shoot at them, as they would have fallen into the sea at the foot of the cliff, where I could not have picked them up. I suspect this species arrives later than the Common Tern, as I afterwards saw several more near the west point of the same island.

RISSA TRIDACTYLA (Linnæus).

There were a few Kittiwakes about the harbour of Ponta Delgada when I first arrived; but I did not see them elsewhere. The master of one of the fruit-schooners told me that this and the next species frequently followed their vessels for the whole of the voyage from England. I do not know that it breeds in the Azores.

LARUS ARGENTATUS, Linnæus. "Garça branco."

Common everywhere about the sea-coasts and mountain-lakes. Some remain throughout the year, though there are said to be more in summer than in winter. They breed about the coast, and particularly on a small island about a quarter of a mile from the south-west point of Fayal, which in June was quite covered with them.

PUFFINUS MAJOR, Faber. "Cargara."

To be seen throughout the archipelago. It breeds, in holes in the cliffs, about the end of May. One bird that I shot contained an egg almost ready for exclusion.

PUFFINUS ANGLORUM, Boie. "Stapagado."

Not so numerous as the last species; like it, however, it breeds in holes in the cliffs, in May, and is esteemed by the inhabitants as an article of food. The specimens I procured were wonderfully fat, and the eggs in the ovaries of two females were in an advanced stage.

? PUFFINUS OBSCURUS (Gmelin). "Frulho."

People living in the island of Flores told me that there was a smaller bird than the last species, but similar in form, colour, and habits. I hence conclude it is *P. obscurus*. It is said to arrive about the month of March, and to breed in the cliffs. It had reared its young and gone again before I was there, and I did not obtain or even see a specimen; neither did I hear of it in the other islands. The natives frequently bring up young birds of this kind tame, as they afford amusement from their grotesque manner of waddling about.

THALASSIDROMA WILSONI, Bonaparte. "Alma de mestre."

On returning from Flores to Fayal we were becalmed for some hours; and as there were a good many Petrels flying about, I took the boat belonging to the schooner and shot some. They were all of this species, nor did I see any other in the archipelago. In flying they carry their legs stretched straight out behind them, and their feet protruded about an inch beyond the tail, producing the effect of two long feathers. I know nothing about this species breeding in the archipelago, though I suspect it does, as it remains throughout the year.

M. Morelet * is the only naturalist, that I am aware of, who has visited the Azores and written upon their ornithology; but his *spécialité* being conchology, the birds did not receive so much of his attention as they deserved. He gives, however, an enumeration of thirty species which he considers to belong to the islands. My own experience leads me to modify this list, as some species contained in it are certainly stragglers, whilst other residents must be included. On reference to M. Pucheran's paper in the 'Revue et Magasin de Zoologie' for 1859 (vol. xi. p. 409), it would appear that M. Morelet actually obtained only four specimens of birds from these islands, whence I infer that the rest of his list was formed from observations casually made, and not corroborated by the collection and collation of specimens. That my own catalogue includes all the stragglers, I do not pretend to say; on the contrary, I have no doubt that the number may be considerably extended; but with regard to the residents, I believe it will be found tolerably correct. Scarcely a storm occurs in spring or autumn without bringing one or more species foreign to the islands—a fact well known to many of the inhabitants; and I have been frequently told that Swallows, Larks, Grebes, and other species not referred to here, are not uncommonly seen at those seasons of the year.

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* Notice sur l'histoire naturelle des Açores, par A. Morelet. Paris, 1850.

The ornithology of these islands, and distribution of the birds amongst the several groups, seem to furnish strong evidence against the supposition that the Azores ever formed a portion of an old continent, which is the theory of Professor Edward Forbes. Were these volcanic rocks the remaining peaks of former continental mountains, should we not expect to find a number of land-birds concentrated upon them, modified perhaps (had sufficient time elapsed) from the species representing them on the present continent of Europe or its adjuncts? whereas the Chaffinch (*Fringilla moreleti*) and Bullfinch (*Pyrrhula murina*) are the only birds that at all aid this view; and the facts of their isolation and difference from their continental representatives can more easily be accounted for by supposing them to have arrived at a remote period of time through the same cause that now brings stragglers from Europe or North Africa, and that subsequent modification has altered them to what we find them to be at present. This cause I imagine to be, the prevalence of *storms.* No contrast could perhaps be stronger than between the Azores and the Galapagos as regards the climate each group possesses. Apparently similar in their origin—both the production of a series of volcanic eruptions—and similar, also, to some extent, in their position as regards the continents of Europe and South America, the former are subject to constant and violent storms, which blow from all points of the compass, while the latter enjoy almost uninterrupted calms (Darwin's 'Origin of Species,' p. 433). Currents flow in varying directions round the Azores, being apparently influenced by the prevailing winds, while those of the Galapagos are strong and unvarying. The results are apparent. The storms which surround the Azores not only maintain, as it were, a circulation of the established species, but constantly bring a fresh stock from the different sources of supply. On the other hand, the calm weather and strong currents of the Galapagos not only sustain the isolation of that group from the continent of South America, but even almost preclude the existence of intercommunication among the islands in sight of each other.

Subjoined is a comparative list, showing the distribution of birds throughout the three groups of islands forming the archipelago of the Azores as I have previously defined them :—

TABLE *showing the distribution of birds in the Azores*[*].

	Eastern group.	Central group.	Western group.	General range of the species.
†Tinnunculus alaudarius	*	..	..	Africa, Europe, Madeira.
Buteo vulgaris........	*	*	..	Europe, Madeira.
Asio otus	*	*	..	Europe.
Strix flammea	*	*	..	Africa, Europe, Madeira.
Turdus merula........	*	*	*	N. Africa, Europe, Madeira.
†Oriolus galbula	..	..	*	N. Africa, Europe, *Madeira.*
Erythacus rubecula, var.	*	*	..	N. Africa, S. Eur., Madeira.
Sylvia atricapilla......	*	*	*	Europe, Madeira.
Regulus cristatus......	*	*	*	Europe, North Asia.
Saxicola œnanthe	..	..	*	North Africa, Europe, Iceland, Greenland, *Labrador, Nova Scotia.*
Motacilla sulphurea ..	*	*	*	Asia, Europe, Madeira.

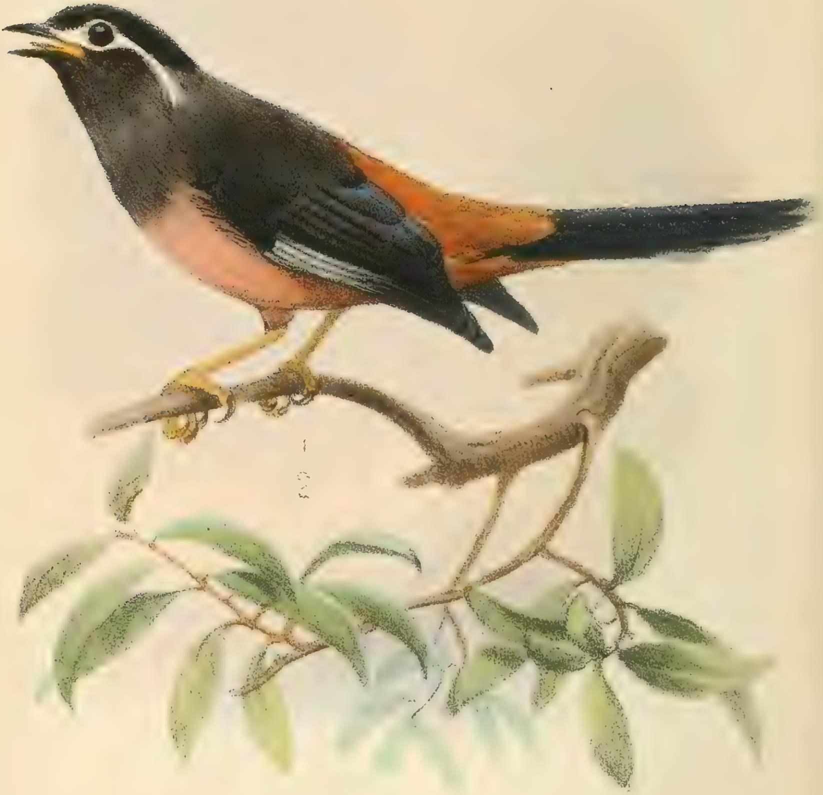
[*] The dagger (†) prefixed before the name of a species signifies that it is a straggler, and not a resident. The names of places in the last column in *italics* signify that the appearance of the species there can only be considered occasional. With regard to this list, I should mention that six species included in the Central group I saw in a collection made by a gentleman in Terceira; therefore, in order to arrive at the correct proportion, these should be subtracted, and the numbers would then stand :—Eastern Group, 40; Central, 36; Western, 29.

TABLE (*continued*).

	Eastern group.	Central group.	Western group.	General range of the species.
†Plectrophanes nivalis ..	..	..	*	N. Europe, Iceland, Greenland, N. America.
Fringilla moreleti	*	*	*	Peculiar to the Azores.
Pyrrhula murina	*	..	..	
Serinus hortulanus	*	*	*	N. Africa, S. Europe.
Sturnus vulgaris	*	*	*	Europe, *Madeira.*
Dryobates minor......	*	?	..	Europe.
†Upupa epops	*	*	..	N. Africa, Europe, *Madeira.*
Columba palumbus ? ..	*	*	..	N. Africa, Europe, Madeira.
,, livia, var.....	*	*	*	N. Africa, Europe, Madeira.
Caccabis rufa	*	*	..	W. Europe, Madeira.
Coturnix communis....	*	*	*	Africa, Eur., Asia, Madeira.
Ægialites cantianus ..	*	*	..	Old World.
†Vanellus cristatus	..	*	..	N. Africa, Europe, *Madeira. Iceland.*
Strepsilas interpres	*	*	*	Cosmopolitan.
Ardea cinerea	*	*	..	Europe, *Madeira.*
† ,, purpurea	..	*	..	N. Africa, Europe, *Madeira.*
† ,, egretta	..	*	..	S.E. Europe.
† ,, garzetta........	..	*	..	Africa, S. Europe.
†Ardetta minuta	..	*	..	Europe, *Madeira.*
†Botaurus stellaris	*	*	..	Europe, *Madeira.*
†Platalea leucorodia	*	..	..	N. Africa, Europe, *Madeira.*
Numenius arquata	*	*	*	N. Africa, Europe, *Madeira.*
,, phæopus....	*	*	*	Africa, Europe, *Madeira.*
Scolopax rusticola	*	*	*	Europe, Madeira.
Gallinago media	*	*	*	N. Africa, Europe, *Madeira.*
Tringa maritima	..	..	*	N. Europe, Greenland, N. America.
†Crex pratensis........	..	*	..	Europe, *Madeira, Bermudas, United States, Greenland.*
Gallinula chloropus....	*	..	..	N. Africa, Europe, *Madeira.*
Fulica atra	*	..	..	N. Africa, Europe, Iceland, *Madeira.*
Anas boschas	*	*	*	N. Africa, Europe, N. America.
,, crecca..........	*	*	*	N. Africa, Europe, *Madeira, N. America.*
Œdemia nigra........	*	*	*	Europe.
†Mergulus alle	..	*	..	N. Europe, N. America.
Sterna fluviatilis	*	*	*	Europe, Madeira.
,, dougalli	?	*	*	Africa, Europe, Madeira, America.
Rissa tridactyla	*	*	*	N. Europe, N. America.
Larus argentatus......	*	*	*	Europe, Madeira.
Puffinus major........	*	*	*	Azorean seas, Europe.
,, anglorum	*	*	*	
,, obscurus ?	*	*	*	
Thalassidroma wilsoni..	*	*	*	N.E. America, *Europe.*
	40	42	29	

A glance at the foregoing list at once shows its entirely European stamp. Every species, except *Thalassidroma wilsoni*, an oceanic wanderer of the North-western Atlantic, is to be found in Europe, or in the outlying provinces of the European fauna—North Africa, the Madeiras, and Canaries. From this generalization two more exceptions must be made,—one in the case of the Chaffinch, which has its nearest and very close ally in the *Fringilla tintillon* of the Madeiras and Canaries; and the Bullfinch, to which *Pyrrhula europæa* or *P. coccinea* must be considered most nearly affined. Both these species seem peculiar to the group. As regards the local peculiarities of Azorean birds, there is certainly a tendency among them to vary, more or less, from their continental representatives. This is especially shown by the former always having darker plumage and stronger bills and legs. In some cases the variation is not greater than may be observed in extreme examples from a large series of continental specimens of the same species; in others it becomes more remarkable, and in *Fringilla moreleti* and *Pyrrhula murina* the exaggeration is carried to such an extent that it is impossible to speak of them but as good species.

The list further shows the gradual falling off in the number of species inhabiting each group of the archipelago as we proceed westward and away from the Old World. Before making this comparison, it seems necessary to take into consideration what species should properly be included. I think that when we find birds having in most places habits so essentially migratory, as the Quail, Woodcock, and Snipe, here becoming resident throughout the year, and losing their wandering instincts from the necessity of their situation, we may fairly except from our calculation the Gulls, Terns, and Petrels, for which these islands simply afford a resting-place in their wanderings, and a resort during the breeding-season. All others would appear, I think, to have arrived involuntarily, having been blown over by storms, or through some other such agency. The Eastern group has forty species, the Central thirty-six, and the Western twenty-nine; so that we have a gradual diminution of the number of species as we proceed westward from the Palæarctic fauna. This seems clearly to show that storms or other external causes



Wolf del. et lith.

M & N Hanhart, imp.

SIBIA AURICULARIS.

have been the means of peopling these islands with bird-life. That the nearest group has caught the most stragglers must be admitted; and that storms do bring stragglers, the occurrence, as I have mentioned, of such birds as the Snow-Bunting and Golden Oriole shows. It also seems tolerably certain that, were it not for the constant persecution carried on by the inhabitants, many species, arriving in sufficient numbers, would be able to establish themselves as permanent residents; and a few years would add, from this source alone, some accession to the legitimate avifauna of these islands. But hundreds of Serins are caught for cages, and the Red-legged Partridge has been exterminated for the table in St. Michael's; it may therefore be not unjustly inferred that other species have been affected in like manner.

Three months is not sufficient time to investigate thoroughly an archipelago consisting of nine islands, situated so widely apart as the Azores are from each other; and that a great deal still remains to be done I am well aware. I would gladly direct the attention of other naturalists to this field, and I am sure they would not regret a visit to a spot to which I myself look back with so much pleasure.

VIII.—*Note on* "Kittacincla auricularis," *Swinhoe*.

By P. L. Sclater, M.A., Ph.D., F.R.S., &c.

(Plate IV.)

One of the most beautiful and not the least interesting of Mr. Swinhoe's more recent discoveries in Formosa is the bird of which a figure is herewith given from Mr. Wolf's pencil[*]. It has been described by its energetic discoverer in a former volume of this journal[†] under the name "*Kittacincla auricularis*," but can, I think, hardly be allowed to be called permanently by this designation, even if Mr. Swinhoe's views as to the validity of the genus "*Kittacincla*" (lege *Cittocincla*), as distinct from *Copsychus*, be correct. In fact I do not consider that the present bird is very closely connected with the group in which Mr. Swinhoe has placed it. According to my ideas it belongs strictly to the *Crateropodinæ* or Strong-footed Thrushes of Asia and Africa, amongst which its nearest ally seems to be the *Sibia capistrata* of the Himalayas. Comparing the two birds together, scarcely any difference in form is perceptible, except that the bill of *Sibia auricularis,* as I propose to call it, is slightly stouter and not quite so long as that of *Sibia capistrata.* The style of coloration is also not very different in these two species; but the pencil of elongated auricular feathers renders the Formosan bird readily distinguishable from all its congeners. Although there is some sort of general resemblance between *Sibia* and *Copsychus,* under which genus I include the members of Mr. Gould's genus "*Kittacincla*"*, the *Sibiæ* are readily recognizable by their large and strong feet, and their broader and much less compressed bill. In *Copsychus* the frontal plumes are peculiar, being short and erect and covering the base of the bill down to the small oval nostrils. In *Sibia* the nasal apertures are lineariform and more exposed, and the frontal plumes do not differ in character from those of the rest of the head. In fact there can be no possibility of confounding the two forms when an accurate examination is made of them, although, of course, it is hardly to be expected that Mr. Swinhoe, in the wilds of Formosa, without books or specimens to refer to, should always be able to refer his new discoveries to the correct genus.

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[*] [We are indebted to the kindness of our good friend M. Jules Verreaux for the opportunity of figuring the type specimen of this species.—Ed.]

[†] Ibis, 1864, p. 361.

Another Indian species referred, by Dr. Jerdon, to the genus *Sibia* is the *Sibia picaoides* (!) of Hodgson, from Nepal, Sikim, and Bootan. This bird is, however, decidedly aberrant in form, both as regards its more tenuirostral bill and singularly elongated tail, which may perhaps necessitate the adoption for it of Mr. Blyth's generic term *Heterophasia.* A more typical species of the genus is *Sibia gracilis* of McLelland, of which examples, collected by Dr. Jerdon in the Khasya hills, are in Mr. Gould's collection. I am not acquainted with *Sibia melanoleuca,* Tickell, from Tenasserim; but Dr. Jerdon states that it belongs to the same type.

The discovery of a species of *Sibia* in Formosa is of great interest, as affording another instance of the recurrence of Indian mountain-forms in this island to which Mr. Swinhoe has already called our attention.

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* *Confer* P. Z. S. 1861, p. 187.

IX.—*Notices of Recent Ornithological Publications.*

1. English.

Mr. Tristram's ready pen is so well known to, and so highly appreciated by, all our readers, that to them we are sure a work from it requires no recommendation from us. But we must call attention to the narrative of his last campaign in Palestine, which has been recently published*. We can honestly say that it is the most agreeable book of travels we have read for a very long time. The constant recurrence in it of observations on natural history makes the work doubly interesting, while the value of the abundant information it contains is increased by the author's singularly pleasing and unaffected style of conveying it. Large as the volume is, there is absolutely not a single dull page in it. We are not surprised to hear that a second edition of the 'Land of Israel' has been already called for, and this will probably have appeared by the time the present notice meets the eyes of our readers. We only wish Mr. Tristram's great literary success in this undertaking might lead to the publication of his Algerian Journals of 1856 and 1857. Their chief ornithological features have, it is true, been already laid before the public, by himself and Mr. Osbert Salvin, in the former series of 'The Ibis;' but that series of papers sadly requires a connecting narrative, such as would be afforded by the sequel to 'The Great Sahara,' which we were once led to expect, and now our hopes on the subject are again revived.

The distinguished German professor who was employed, some twenty years ago, by the Ray Society to report on the progress of ornithology, considered that the publication of such works as those upon which Mr. Gould has hitherto been engaged would ultimately injure the science they professed to advance, and he deliberately proposed that their existence should be completely ignored. Should this gentleman be still in the land of the living, as we certainly trust he may be, it must be some gratification to him to learn that Mr. Gould has produced a book which is not specially designed for the amusement of *dilettanti*, but, on the contrary, is intended to be of real service to the working ornithologist. The 'Handbook to the Birds of Australia'[*], the publication of which we announced some months ago (Ibis, 1865, p. 239), has recently appeared; and we do not hesitate to declare that it is one of the most useful as well as one of the most important works on ornithology that has seen the light during the past year. It is most useful, since the bulk, to say nothing of the expense, of his previous labour on the same subject, the magnificent 'Birds of Australia,' places it out of the reach of most private persons; and it is most important, because this very facility of using it is sure to give a powerful impulse to the study of ornithology among the flourishing communities who inhabit the southern outliers of the British empire.

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* The Land of Israel; a Journal of Travels in Palestine, undertaken with special reference to its physical character. By H. B. Tristram, M.A., F.L.S., &c. London: 1865 (Society for Promoting Christian Knowledge). 8vo, pp. 652.

To review this book would be impossible for us at present; but, should time and space allow, we will return to its further consideration. Mr. Gould has, as it seems to us, very fairly fulfilled our words of promise to which we have but just referred. We owe him our thanks, especially for carrying out rigidly the law of priority in nomenclature; and herein he sets a good example to many of our cotemporaries; for he is quite willing to disregard names conferred even by himself when convinced that they are but synonyms of those previously applied to the same species by other writers. We must, however, state that in some respects Mr. Gould fails to meet the requirements of science at the present day. In the work we are noticing he creates a not inconsiderable number of new genera, and this without defining their limits. The mania for genus-making, now unfortunately so prevalent, appears to us, more likely than anything else, to put a check upon future biological investigations. But hitherto we believe that the worst offenders in this respect have usually been accustomed to give some rational definition of the new groups they propose to establish. Our author, we are sorry to say, sometimes neglects this very necessary precaution. In his first volume we have the names *Melanodryas, Pœcilodryas,* and *Stigmatops* proposed and used without any further indication of generic characters than the reader can himself gather from his own knowledge of the species assigned to them. We are quite ready to admit that generic division is a mere matter of convenience; but in order that it may be so, it is, and has always been regarded as, absolutely essential that such divisions should be defined. The cases we have cited are bad enough; but we cannot even allow that the good old classical rule is obeyed in the following paragraph from the second volume, which is apparently intended as the definition of a new genus, *Ptistes*:—

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[*] Handbook to the Birds of Australia. By JOHN GOULD, F.R.S., &c. London: published by the author, 26 Charlotte Street, Bedford Square. 1865. 2 vols. Royal 8vo.

"The birds for which I propose the above generic appellation are, in my opinion, sufficiently different in form and colouring to warrant their being separated from *Aprosmictus,* and formed into a new genus. At present three species are known to me. * * * They have a very laboured flight, consequent on the great size of their wings, which has suggested the generic name of *Ptistes,* i. e. winnower."

It is with extreme regret that we make these depreciatory remarks; but the interest of our science seems to call for some such protest. After all, the imperfections of which we have spoken are but slight drawbacks to the practical utility of this 'Handbook,' and they may be easily remedied in a second edition, which, unless we greatly overrate the ornithological yearnings of the "Corn-stalks," we venture to predict will be soon called for.

In some "Notes on the Chatham Islands," by Mr. H. H. Travers, published in the 'Journal of the Linnean Society,' a short account of the ornithology of those islands is given, which we here reproduce, seeing that, as it is included in the Botanical division of the Society's publication, it might otherwise escape our readers' attention.

"There are at present but few land-birds either on this [Chatham's] or on Pitt's Island. Formerly the White Crane (*Herodias flavirostris*), the Bittern (*Botaurus melanotus*), an

Apteryx said by the Maories to have been identical with a New Zealand species, and also, according to their accounts, a smaller species of the same bird (though I believe this to be the *Rallus dieffenbachi*), the Weka (*Ocydromus australis*), and the Kakapo (*Strigops habroptilus*) were found on both islands, but have become extinct since their invasion by the New Zealanders [in 1832 or 1835]. Mr. Hunt informed me that the last time he had seen the Bittern was about three years ago. The land-birds now found are a large Falcon, the Pigeon, the Tui or Parson-bird, the Pukeko (*Porphyrio melanotus*), the Parrakeet (*Platycercus novæ-zealandiæ*), the Fantail, the Pihoihoi or Lark, and a small Titmouse, all identical with birds of the same species found in New Zealand. I was told by Mr. Hunt that the Pigeon was first seen on the islands within the last eight years, and that the Titmouse appeared shortly after the occurrence of the great fire in Australia, known as the 'Black Thursday Fire.' Mr. Hunt is a very careful and trustworthy person; and as his statement relative to the Pigeon was confirmed by the Maories, I have full reason for believing what he told me, in regard to both birds, to be true. Of aquatic birds, I saw the Grey Duck, the Brown Teal, and two species of Shag common in New Zealand, and a large number of Gulls and other sea-birds similar to those which frequent the coasts of that country. Mutton-birds were extraordinarily numerous on a rock known as the Fort, lying between Chatham and Pitt's Islands. During my journey round Chatham Island, of which I have given you an account above, I saw a peculiar Teal on one of the lagoons near the Red Bluff. This bird had bright scarlet markings on the wings. I fired at it; but, owing to the great dampness of the weather, the gun I had with me hung fire, and I missed the bird. I never saw another specimen, and was informed that it was very uncommon. The number of land-birds of all kinds, however, is extremely limited; indeed it is rare to meet with any at all during a whole day's walk in the bush. I attribute their destruction principally to wild cats, the progeny of imported animals, although I was informed that a species of Gull or Sea-Hawk also attacks the land-birds, and is especially destructive to poultry."

It would be very desirable, if possible, to ascertain precisely the species of flightless birds, such as *Apteryx*, *Strigops*, and *Ocydromus*, which were formerly found on these islands, as the question is naturally a most interesting one.

2. GERMAN.

Herr August von Pelzeln has been good enough to forward us a copy of his work on the Ornithology of the Voyage of the 'Novara' round the world in the years 1857–59 *. The principal portion of the ornithological objects were collected by Herr Zelebor, who was among the men of science forming the Expedition; but various and not inconsiderable additions were also made by other naturalists, among whose names we are gratified to see Mr. Swinhoe's. We are left to infer the route taken by the 'Novara;' but this appears to have been from Europe to Rio de Janeiro, touching at Madeira, thence to the Cape of Good Hope, and so on to St. Paul's Island; after that to Ceylon, the Nicobar Islands, Malay archipelago, and the Coast of China; then the Marian and Caroline Islands (Puynipet) to Australia and New Zealand; then across the Pacific, visiting the Society Islands, Pitcairn, Mitchell's Islands, and Juan Fernandez, to Valparaiso, and so home by way of Cape Horn. In the introduction, Herr von Pelzeln suggests the propriety of forming the ocean south of the tropic of Capricorn into a new zoological region, in addition to those proposed in the well-known geographical classification of Mr. P. L. Sclater. The arguments adduced, however, in favour of this course are not, we think, sufficiently convincing, being founded chiefly on the fact of the very peculiar genus *Chionis*, and the yellow-hooded species of *Eudyptes* being confined within those limits. The author's remarks on the variations in the plumage of many members of the *Falconidæ*, and on the geographical distribution of *Accipitres*, deserve attention. As species now for the first time publicly described, we have *Micrastur macrorhynchus* from Brazil—a discovery of Natterer's! (on which Herr von Pelzeln takes occasion to describe minutely the allied species *M. concentricus* and *M. gilvicollis*), *Gerygone auck-*

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* Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859. Zoologischer Theil. Erster Band Vögel von AUGUST VON PELZELN. Wien: 1865. 4to, pp. 176, tabb. 6.

landica from New Zealand, *Mecistura swinhoii* from Shanghai, *Volvocivora schierbrandi* from Borneo, *Carpophaga frauenfeldi* from Stewart Island, and *Aramides zelebori* from Brazil. An interesting fact ascertained by the Novara Expedition is the true locality of the beautiful *Chalcopsitta rubiginosa*, which turns out to be the island of Puynipet, one of the Caroline group, a little to the north of New Guinea. We hardly know whether this bird is to be accounted one of the "Crimson" Lories; but if so, Mr. Wallace will have to enlarge the borders of the area he assigned to them.

'The Birds of Cilli' are treated of in a paper contributed by Herr Eduard Seidensacher to the Natural-Science Union of Steiermark (Styria) in 1864*. Two hundred and four species (to which two others are added in manuscript, in the separately printed copy with which the author has favoured us) are enumerated as occurring in the district. None of them are of any remarkable rarity; but the notes appended seem to be carefully drawn up, and the whole article contains much useful information respecting this (ornithologically speaking) little-known region. *Strix uralensis* is supposed by Herr Seidensacher to breed in Styria, though he has not hitherto been able to ascertain the fact positively.

3. DUTCH.

A treatise on the Episternal Apparatus of Birds has been contributed by Heer P. Harting to the publications of the Utrecht Society of Arts and Sciences †. We are aware that the word *episternum* has been used by writers in several senses; that attached to it by our author seems to show, if we understand him rightly, that he means to comprehend under the designation of "episternal apparatus" all the membranous appendages which connect the coracoids and furcula with the sternum, and which are only occasionally (that is, in some particular groups or species) ossified, even in adult birds. A plate containing seventeen figures accompanies the paper, and we must especially recommend to our readers' notice the beautiful execution of them. They quite put to shame any osteological figures we have lately seen produced in this country; and it is only fair that we should mention that the artist's name is P. W. van der Weyer of Utrecht. A singular mistake, however, is made in one point: "Fig. 15" represents, and that very accurately, the anterior portion of the sternum of *Grus cinerea*—not *Cygnus musicus*, as stated in the article (page 16) and in the explanation of the plate.

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* Die Vögel von Cilli. Separat-Abdruck aus den Mittheilungen des naturwissenschaftlichen Verein für Steiermark. Heft ii. 1864.

† L'appareil épisternal des Oiseaux. Natuurkundige Verhandelingen uitgegeven door het provincial Utrechtsch Genootschap van Kunsten en Wetenschappen. Nieuwe Reeks. Eerste Deel, derde stuk. Utrecht: 1864. (London, Williams and Norgate.)

Professor Schlegel's monograph of the Kingfishers of the Dutch Indies * is a meritorious work. The text is, unfortunately, though naturally, in Dutch; but a "Revue Synoptique" in French of the species mentioned is added. This is in a great measure taken from the author's catalogue of *Alcedines* in the Leyden Museum, already noticed in 'The Ibis' (1864, pp. 124, 125). An important feature of the book is the profuseness of its illustrations. Of the nine and thirty species of *Alcedinidæ* which, according to Prof. Schlegel's computation, are found in the eastern possessions of the King of the Netherlands, all but two are figured, and some of them six or seven times,—though it must be remembered that the "species" to which this honour is accorded are, in the estimation of most ornithologists, capable and deserving of differentiation far more than our author will allow—as, for instance, *Tanysiptera dea*, which is made to include at least four other forms which have been characterized as separate species.

We cannot understand why there is so little in common between English naturalists and the English public. It scarcely ever happens that a professedly popular work on natural history, published in this country, is not full of blunders more or less ridiculous, the reason being of course that the author is not equal to the due performance of his task. They seem to manage things better abroad. One popular work, by an ornithologist of the very first rank, has been noticed over and over again in this Journal. We have now to mention another and more ambitious attempt *, equally well carried on, by an equally able naturalist, in the work whose title we transcribe below. Ostensibly a description of the vivarium of the flourishing Zoological Society at Amsterdam, the 'Dierentuin' contains a very good general history of the class *Aves*, embellished with fair engravings representing, if we are not mistaken, some species of birds which have not hitherto been figured. A book-maker in want of a subject might do much worse than translate this work, and might make arrangements with the brothers Van Es for the use of the woodcuts, so as to bring the whole out in England.

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* De Vogels van Nederlandsch Indië, beschreven en afgebeeld door H. SCHLEGEL. Haarlem: 1864. 4to.

4. Russian.

We have at last been able to examine the work in which Herr Radde has recorded the results of his travels in Siberia †, and a very valuable volume it is. Here we must content ourselves with the briefest notice of it, as to do justice to it would indeed require a review of much greater length than we could afford space for. The book is indispensable to all who busy themselves with the ornithology of any parts of Europe and Asia; and since it has formed the subject of an article in a recent number of the 'Natural History Review,' in which article we trace the pen of the greatest master of the subject of ornithological distribution, we are the less concerned at not being able to say as much of Herr Radde's labours as we should have wished. Two new species are described in the work,—(1) *Sylvia* (*Phyllopneuste*) *schwarzi*, which, judging from the figure, appears to us to be rather a *Locustella*; and (2) *Anas* (*Fuligula*) *baeri*, which seems to be a hybrid—a possibility suggested indeed, though controverted, by the author (p. 376). The plate represents this last supposed species as a bird very similar in colour to the hybrid which has been variously denominated *Fuligula homeyeri* or *F. ferinoides*, except that it has the head of a dark brownish-black colour, glossed with green—a character which would lead us to suspect that *F. marila* and *F. cristata* are accountable for its origin. Another noteworthy fact mentioned by Herr Radde is, that specimens of *Falco vespertinus* from Eastern Siberia, have the under surface of the wings either entirely white or white barred with grey, instead of the uniform deep tint which is found in European examples. The former are distinguished by our author as "var. *amurensis*"*. We must also take occasion to remark that Herr Radde, who has certainly enjoyed preeminent opportunities for observation, declares (p. 292) that *Syrrhaptes paradoxus* lays *four* instead of *three* eggs. This statement is in confirmation of that of M. Delanoue, but opposed to the testimony of Prof. Reinhardt (*cf.* 'Ibis,' 1864, p. 196), as well as to what might be supposed, by analogy from the prevalent practice in other *Pteroclidæ*, to be the habit in *Syrrhaptes*.

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* De Dierentuin, van het Koninklijk Zoologisch Genootschap *Natura Artis Magistra* te Amsterdam. De Vogels. Gescherst door Prof. H. Schlegel. Amsterdam. 4to.

† Reisen im Süden von Ost-Sibirien in den Jahren 1855–1859. Von Gustav Radde. Band ii. Die Festlands-Ornis des südöstlichen Sibiriens. St. Petersburg: 1863. 4to.

5. AMERICAN.

'The Journal of Proceedings of the Philadelphia Academy' for last June contains a paper by Mr. Lawrence, which, though not a long one, demands a somewhat detailed notice here. The species (four in number) characterized as new have all been previously mentioned in that gentleman's lists of the Birds of Panama, published in the 'Annals of the New York Lyceum,' but have been mentioned under other names. *Tachyphonus rubrifrons* is apparently distinct from *T. xanthopygius*, to which Mr. Lawrence formerly referred it. *Anthus parvus* is now separated from what the author considers to be *A. rufus* of Gmelin, from Bahia; but having regard to what Professor Baird has recently said in his 'Review of the Birds of North America' as to our confused knowledge of the South American Titlarks, we cannot help feeling that the difficulty in making them out is hardly decreased by this addition to the number of described species.

Mr. Lawrence is at some pains to show that *Thamnophilus nigricristatus* differs from *T. affinis*, Cab. and Heine (Mus. Hein.

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* We hear that Mr. Gurney has received this variety from Natal!

ii. p. 17), the Central American form of *T. doliatus*. In this he is doubtless correct; but does the supposed new bird differ from *T. radiatus*, Vieillot? Mr. Sclater has given (Edinb. Phil. Journ., N. S., i. p. 236, and P. Z. S. 1858, p. 218) concise diagnoses whereby *T. radiatus* may be distinguished from *T. doliatus*, referring especially to the black crest, the narrower and better-defined black bands on the breast, and the like. These are points of distinction between *T. nigricristatus* and *T. affinis*. The females, too, differ in the same respects from *T. doliatus* and *T. affinis*, of which last species surely Mr. Lawrence describes a young male when he refers to the wing-coverts being "brownish-black, barred and tipped with rufous, and the smaller quills barred and spotted with black," and as having faint indications of narrow bars on the upper plumage (p. 108). We, of course, have not seen Mr. Lawrence's specimens; but we believe that the adult female *T. affinis* is destitute of all such marks, and suspect that *T. nigricristatus* will prove to be identical with *T. radiatus*.

The young males of *T. radiatus* and *T. affinis* would be difficult to distinguish, and very possibly Messrs. Sclater and Salvin were wrong in referring one of their specimens to the latter; for Mr. Salvin informs us that the example in question has some white in the crest, though much less than any individual of *T. affinis* that he possesses. We are therefore inclined to think that there exists in the Isthmus but one species—namely, *T. radiatus*, to which we have shown that *T. nigricristatus* must be very closely allied, if at all separable from it, while the first specimens received thence by Mr. Lawrence, and called by him *T. doliatus*, are, he now says, *T. radiatus*; and Mr. Salvin confesses that the bird he called *T. affinis* (P. Z. S. 1864, p. 355) is most likely after all the same species, the range of which on the South American continent is extensive, skirting the Andes from Bolivia to Panama. Its presence as sole occupier of the Isthmus, and separating the northern from the southern forms of *T. doliatus*, is of some significance when considering the barriers to their geographical distribution.

Geotrygon albiventer is the fourth of Mr. Lawrence's new species. The close proximity of Panama to Chiriqui makes us suspect it may ultimately prove identical with *G. chiriquensis,* though there are discrepancies in the descriptions. Still, when such delicate bronze-colours have to be spoken of, it is hardly likely that two writers should call the same tint by the same name. The Chiriqui bird is somewhat larger (wings 5·9 inches instead of 5·5 inches); but not having specimens of either before us, we cannot decide the point.

In the 'Proceedings of the Boston Society of Natural History' (vol. ix. pp. 368, 369), our friend Dr. Bryant describes, under the name of *littoralis,* a new variety of *Parus hudsonicus* from Yarmouth, Nova Scotia, and has some "Remarks on the genus *Galeoscoptes* of Cabanis," from which he proposes to remove *Turdus rubripes* of Temminck and *Turdus plumbeus* of Linnæus, raising, for the benefit of the former, Mr. Sclater's subgenus *Mimocichla* into a genus, and relegating the latter to a new genus, which he calls "*Mimokitta,*" or, as we should prefer to write it, *Mimocitta.* Dr. Bryant gives a very detailed account of the peculiarities of these genera, as well as a description of the *Mimocitta plumbea,* which, except by Catesby, he says has never before been accurately done.

X.—*Letters, Announcements, &c.*

The following letters, addressed "To the Editor of 'The Ibis,'" have been received:—

Takow, Formosa, 1 July, 1865.

Sir,—My report for last month need not be a long one. Early in June a photographer from Amoy, Mr. Edwards, returned from a visit to the neighbouring mountains with some photographs of the Kalee savages, which I have forwarded to the Geographical Society. He also brought a skin of *Urocissa cærulea.* This, which he informed me was a common species, is identical with the bird of the Tamsuy vicinity. * * * At the commencement of the month both *Dicrurus macrocercus* and *Zosterops simplex* had young ones flying about. Most birds here breed twice in the year, some few three times; Kites, however, only once; but more of this hereafter.

The heat, duty, and the damp state of the weather, all unite to keep me from wandering far into the country; but I have native assistants at work.

A man I sent lately to the mountains succeeded in procuring me a Green Dove. Much to my delight, it was the long-wished-for male. I had founded the species on a single female specimen procured at Taiwanfoo in 1861, where I had only seen one other example (Ibis, 1863, p. 396). It is a mountain species, coming down, as the natives of the interior report, in summer to feed on the berries of a particular tree. This male confirms my view as to the specific value of the bird, though it is closely allied to *Sphenocercus sieboldi* (Temm.). I will now describe my specimen:—

Sphenocercus formosæ, ♂. Length about 13·75 inches; wing 7·25; tail 5·75, much wedged, the outermost feathers being 1·75 in. shorter than the middle ones. Head and neck fine grass-green, greenish-yellow on the throat and breast, the base of each feather being leaden-white. Belly and under tail-coverts pale primrose-yellow. Axillaries and under tail-coverts fine lead-colour. Flanks and vent broadly striped and banded with leaden-green, which colour also marks the bases of the under tail-coverts and their stems. Upper plumage dull green, back and rump washed with lead-colour. On the shoulders a large patch of dull maroon or madder. The remaining wing-coverts and tertiaries green, more or less marked on their concealed parts with leaden-black. Quills black, faintly edged with green; a few of the secondaries and the bordering coverts more broadly edged with primrose and green. The two middle rectrices pointed and green above, the next pair with a faint black bar, which becomes larger on each successive pair as the outermost is approached, in which the green is scarcely perceptible. Beneath, the rectrices are black, with ashy-grey tips. Bill and legs as in the female.

The same man also brought me a pair of young Tiger-Bitterns (*Gorsachius goisagi*) alive. I tried to keep them, offering them flesh and soaked bread, on which food the Chinaman said he had kept them for several days. They must, however, have been half-starved when they arrived; for they soon died. It is a pity I did not try them with fish at first. Their cry was almost exactly that of a Duck. Their plumage differed entirely from that described by Bonaparte in the 'Conspectus Avium.' Indeed I think he must have confounded the young with the old bird. The adult I got some time ago (Ibis, 1865, p. 359) had a chestnut head, while both these immature specimens have black heads. Can there be more than one species of this abnormal Ardeine? Mr. Blyth, I see, identifies (Ibis, 1865, p. 38) the *Ardea melanolopha* of Raffles with the Japanese bird. If they are the same, the range of the species must extend from Ceylon to Japan. I procured one adult bird in Tamsuy, and another here; but as I have sent them both home, I cannot speak with certainty on the subject. The two nestlings I have just procured are nearly full-grown. They were taken, with their mother, from a tree at the foot of the inland mountains; but, unfortunately, the parent did not reach me. At a subsequent time I will endeavour to clear up the matter, and content myself now with giving a short description of the young birds:—

Gorsachius goisagi (young nearly full-grown). Bill lead-colour, with a yellowish tinge, blacker on the culmen and near the tip. Coronal and occipital feathers fine black, with white spots and streaks, those of the front having brown edges. Upper parts brown, undulated, spotted, and variegated with light reddish-brown, these markings being pale on the wing-coverts; lower large winglet chestnut, tipped with white, and mottled with black towards the tip, the outward feather being almost entirely black, except its broad white tip. Upper winglet black, tipped with white. Quills black, broadly tipped with white, which is mottled more or less with brown—some of the feathers being reddish near the white, and mottled with brown. Tail black. Throat white; lower part of the neck light reddish ochre, undulated and mottled with blackish-brown. Rest of the under plumage white, undulated with blackish-brown, and variegated with light yellowish-brown. Legs bright yellowish-green; soles and hinder part of tarsus yellow; claws pale.

So much for June! I am, &c.,

ROBERT SWINHOE.

Oakfield, Reigate, Oct. 1865.

Sir,—Having read with much interest Captain F. W. Hutton's Notes in the last number of 'The Ibis' (for July 1865), "On some of the Birds inhabiting the Southern Ocean," I observe that he remarks (p. 280), with respect to the Albatros (*Diomedea exulans*), "It is more difficult to collect sufficient evidence of their rarity from November to March, as few voyagers visit the regions they inhabit at this season, and fewer still take notice of the birds." Upon this hint I venture to send you a few remarks, based on my own observations during a voyage from Pernambuco round Cape Horn to Valparaiso, in December 1855 and January 1856.

No doubt Albatroses are comparatively scarce in mid-ocean at this season of the year; for, as nearly as I can recollect, we did not fall in with the first until nearly 45° S., and that was a Sooty Albatros (*D. fuliginosa*)—a species which appeared to be both scarcer and far more wary than *D. exulans*. From the latitude above mentioned the latter were our constant companions, and we seldom had fewer than twenty to thirty round the ship—a tolerable number considering that this was the height of the breeding-season. The captain of the good clipper 'Atrevida,' who had doubled both Cape Horn and the Cape of Good Hope some score of times, informed me that Albatroses ranged further north in the Eastern than in the Western Atlantic.

On the 4th of January 1856 we ran, under a favourable wind, through the Straits of Lemaire, between Staten Land and Tierra del Fuego, rounded the Horn in about 59° 30′ S., and in rather less than a fortnight after leaving the latitude of Stanley, Falkland Islands, were safely moored in Valparaiso. Such a rapid run was naturally most unfavourable to Albatros-catching, and our success with hook and line was *nil*. Our efforts to procure specimens by firing at the birds and attempting to drop them on deck were equally unavailing. I could not, therefore, identify any specimens of *D. melanophrys*; but, although many of the birds we saw were much marked with brown, and smaller than some of the snowy-white examples we met with further south, I imagine they all belonged to *D. exulans*. Neither could I identify *D. brachyura*; but on a later occasion, between Valparaiso and Callao, in about 15° S., I noticed an Albatros which was certainly not *D. exulans*.

As Captain Hutton's remarks show, the Albatros "sits down to dinner;" and I have seldom read a more graphic description than that (p. 282) of its settling down in the water. Quite agreeing with his observations respecting the non-diving and non-fishing propensities of this bird, I am sorry to say that my experience entirely differs from his with regard to the habits of the Albatros being quite diurnal. I can of course give no account of its movements during *dark* nights; but, both by moonlight and afterwards in the summer twilight of the Antarctic Seas, I have watched these noble birds come sweeping up out of space, wheel over the main-truck, and then, without a flap of their huge wings, drop away beyond the reach of vision. Mingled with the Albatroses were some of a large dark Petrel, though the latter always kept astern of the ship, and, from their sooty hue,

> "Like devils of the pit they seemed
> Mid holy cherubim."

But here I must stop; for if I attempt to give any further description of these moonlight nights, some of the pleasantest of my life, I shall begin to rhapsodize, and give Captain Hutton cause to think that the night-flights of the Albatros are all "moonshine."

I have little to say about other birds of the Southern Ocean. Cape Pigeons (*Daption capensis*) were duly caught, and as duly converted into "sea-pie;" foolish birds! they came further north than the Albatroses, and met the ship before we caught the gale which gave us such a rattling run. When far south, I observed a silvery-grey Petrel, which was, I presume, *Procellaria glacialoides*, but I did not capture any examples. Of the common Storm- and the Fork-tailed Petrels I have taken many in the North Atlantic, by means of stout threads left to trail from the taffrail, with a double knot, or just the least bit of "sennit" at the end, to act as a catch, when the birds become entangled in their flight in the wake of the vessel.

I trust that Captain Hutton's paper will draw forth some observations from other voyagers, especially with respect to the abandonment of the young Albatros without any *apparent* means of subsistence from March until October.

I remain, Sir,
Yours obediently,
HOWARD SAUNDERS.

Dobroyde, New South Wales,
21 October, 1865.

SIR,—Having lately had Mr. Gould's 'Birds of Australia' before me, I wish to make a few further remarks on the species of *Pardalotus*.

The bird figured on plate 39 (vol. ii.) is undoubtedly the common Sydney species, namely *P. affinis*. In that district it annually arrives during the month of August, in company with *P. punctatus*. I have besides shot specimens of the same species on the Bogan and Bell rivers, at Goulburn, Braidwood, and Liverpool, where I also procured the variety with deep orange tips to the spurious wing-feathers. Further, I have received it from Port Denison, along with *P. melanocephalus*.

The species figured on plate 38, *P. striatus*, I have never known to occur near Sydney, and was much surprised at finding it breeding at Cardington. But I have several times received specimens of it from South Australia, where, I am informed, it is very common. This species has the outer webs of the *third to the seventh* primaries, inclusive, white, and the tips of the spurious wings deep orange. *P. affinis* sometimes has the tips of the spurious wings light orange or yellow, and sometimes deep orange, as I have before mentioned (Ibis, 1865, p. 298), but never more than the *third* primary white on the outer edge.

I have recently met with a colony of *P. affinis* breeding under circumstances similar to that of *P. punctatus*, which I before described—namely in a batch of nests of *Chelidon ariel*, under the the eaves of a house at Springfield near Goulburn. They were not at all disturbed by the return of the rightful owners, but continued to breed in company with them. Mr. M. Faithful informs me that the Pardalotes arrive every year a few weeks before the Martins, and betake themselves to such of the nests of the latter as have not been knocked down. These they line afresh with grass and hair, and, laying four roundish white eggs, begin to breed.

This species of Pardalote I have also frequently found breeding in the hollow boughs of the *Eucalypti*. *P. punctatus* and *P. melanocephalus* are the only species I know of that pick out for themselves holes in the ground; having there hollowed a long narrow chamber large enough, they line it with fine shreds of stringy-bark and the like. The eggs of *P. melanocephalus* are larger than those of any of the others; but all are white, and usually ovate.

In the last part of my "Notes on Birds breeding in the neighbourhood of Sydney" (Ibis, 1865, p. 299), the paragraphs headed *Chelidon arborea* should refer to *C. ariel*; and in the footnote on page 298, the word "orange" in line 5 from the bottom should be "yellow."

I am, &c.,
EDWARD P. RAMSAY.

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28 Wellington Street, Woolwich,
November 18th, 1865.

SIR,—In the last number of 'The Ibis' you inquire if any of your readers have ever seen a Skua in the act of swimming. I beg leave, in reply, to inform you that I have seen one species, *Stercorarius parasiticus*, several times so doing, and have a specimen now by me which was shot while swimming in the Thames, about two miles below Woolwich, in October 1864.

I am, &c.,
H. WHITELY.

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9 December, 1865.

SIR,—A short time since, on looking over some skins which were on sale at Mr. Stevens's in Bloomsbury Street, I observed an immature specimen of *Hypotriorchis concolor*, which he informed me had been brought from the Zambesi River by Dr. Kirk. As this species is not included in either of the lists of the birds of that region published in 'The Ibis' for 1864, and as also I have never before seen it from any locality south of the Equator, I think it well to record the fact.

The specimen above mentioned, which I have placed in the Norwich Museum, is in immature plumage, resembling *H. eleonoræ* at the same age, and *H. subbuteo* in the mature dress; a few grey feathers, however, are visible, indicating that the assumption of the adult plumage had just commenced.

To the skin was attached a ticket, of which the following is a copy:—

"Eats dragonflies, grasshoppers, &c. Flies like a Swallow in the evening. Tarsus yellow; iris brown. Elephant Marsh, 1/63."

I am, &c.,
J. H. Gurney.

Following quickly on the discovery of remains of the Rodriguez Didine bird, mentioned in our last volume (p. 551), has come news of a still more interesting discovery in the neighbouring island of Mauritius. Mr. George Clark, a gentleman living at Mahébourg, near the site of the old Dutch town of Grand Port, has had the good fortune to find a large number of bones of the true Dodo (*Didus ineptus*) in the mud of a small mere, called the "Mare aux Songes," which has been lately drained. These he has sent to England; and they include almost every portion of the bird's skeleton. The most perfect series has been transmitted to Professor Owen, by whom they will be described in the 'Transactions of the Zoological Society.' The next perfect set is, thanks to Mr. Clark, in our own possession, and the remainder, which also passed through our hands, are shortly to be disposed of by Mr. Stevens, the well-known natural-history agent. An examination of these bones most decidedly confirms Professor Reinhardt's view of the Columbine *affinities* of the Dodo; but, for all that, it may well be that the *Dididæ* formed an order of themselves. A more wonderful structure than the Dodo's skeleton it is not easy for the ornithologist to conceive!

THE IBIS.

NEW SERIES.

No. VI. APRIL 1866.

XI.—*A Voice on Ornithology from Formosa.*

By Robert Swinhoe, Her Majesty's Consul, F.Z.S., &c.

(Plate V.)

I have been very unfortunate with regard to my scientific books. The two closing numbers of 'The Ibis' for 1864 went down with the mail-steamer in a typhoon; and some other works have since been carried off by pirates on the capture of a schooner bound from Amoy to this port with the mails. Thanks, however, to the deity that presides over science, the two first numbers of the New Series are at hand. Mr. Blyth, I am pleased to see, is still hard at work. I have read his "Identifications and Rectifications of Synonymy" (Ibis, 1865, pp. 27–50), and can corroborate most of what concerns my sphere of experience. I should like, however, to say a few words.

Eurystomus orientalis, L. (p. 30), I take to be the summer visitant of South China, and not *E. australis*, Sw. My specimens are with Mr. Tristram, and this question can very easily be settled by any one who cares to take the trouble. *Merops philippinus* I have also received from Swatow, in the Province of Canton (see Ibis, 1865, p. 230). *Lanius hardwickii*, Vig., and *Nectarinia flammaxillaris*, Blyth, *may* occur in China, but I have never had the good fortune to meet with them. "China," however, is a broad term, comprising no small part of Asia.

Surely a collector could give a more restricted habitat for his captures! I cannot, however, myself accept Mr. Fortune's *Chinese* species. His sole object appears to have been to procure showy things, and he could have had no interest at heart in noting down their special localities. Furthermore I have before explained that Canton is a great emporium for all kinds of showy birds, many of which are brought from all parts of the Indian archipelago. I have in some of the shops there seen side by side *Ampelis garrulus, Loxia curvirostra,* and other North-China species with Lories, Parrots, Parrakeets, Love-birds, &c. I was informed by Mr. G. R. Gray that *Loriculus galgulus* was brought by Mr. Fortune from China. I did not specially wonder at it, as I myself had procured skins of *Paradisea apoda* at Canton, and had seen the Malayan birds above noted. Nevertheless I did not, on the strength of such evidence, introduce *L. galgulus* into my Chinese list. I do not, by any means, wish to disparage Mr. Fortune's labours in the cause of science, but simply insist upon satisfactory evidence before I can take upon myself to admit a species, when I consider the determination of the geographical distribution of birds of such importance. A live bird purchased in a shop, or a dried skin procured in the same way, by no means proves that the creature was found wild in the neighbourhood of the shop. It may matter little in horticulture whence a fine form comes, but its *exact* habitat is positively required in our science.

I wish somebody would give us a list of the Philippine Birds*. It would be of great service to me. I have just heard of a Dr. Otto Semper who has been some years collecting specimens in Manilla. I am trying to get up an exchange and a correspondence with him. Some fruits will, I hope, result from this.

The Cuckoos are very bothersome. According to Mr. Blyth my newly-described *Cuculus monosyllabicus* (Ibis, 1865, p. 545) will be *C. canoroides,* S. Müller. I will make an effort to work the genus by-and-by.

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* [Such a list has just appeared in the 'Journal für Ornithologie' for January 1866. It has been compiled with much pains by Dr. Eduard von Martens.—Ed.]

Mr. Fortune's *Eudynamis australis*, Sw., from China (p. 32), must surely be a joke. I shall have again to appeal to my collection at home. *E. orientalis* I have received from Siam, and I know it to be the Philippine species. The Australian species would have therefore, if really found in China, to traverse the ground of its Asiatic ally twice a year in its migrations. This can scarcely be likely.

The note on *Turnix* (p. 33) is highly interesting. *T. maculosa*, Temm., is the commoner species in South China. The other is allied to *T. ocellata*, Scop., but I am not yet prepared to affirm that it is identical with it. I mentioned, in a letter, that my new Formosan species, *T. rostrata* (allied to *T. maculosa*), was shot while attending to its young [Ibis, 1865, p. 543], and that on dissection it proved to be a *male*, and that its mate was not forthcoming. I am inclined to think that even in its nidificatory instincts the *Struthious* affinities are prominent, and that it will be eventually found that the entire duties of incubation are attended to solely by the male. It would be as well to call the attention of observers in other parts of the world to this important idea. The four chickens of *T. rostrata* that I procured under the circumstances before detailed I have bottled, and shall be sending home shortly for Mr. Parker's investigation.

Sturnus dauricus, Pall. (p. 41, note), has occurred at Tientsin (North China) in summer. I should like much to know whether it is found in the Malayan peninsula all the year. *Fregilus graculus* from Java (*loc. cit.*): I can confidently affirm that I saw a mounted specimen of this species in the "India Museum" marked "Java."

Cypselus subfurcatus, Blyth (*loc. cit.*), as its name implies, has a *more* furcate tail than its ally *C. affinis*, J. E. Gray. The mistake is not mine, but the printer's. While on misprints I may just mention one that ought specially to be corrected. It occurs in my 'Formosan Ornithology,' p. 58, 5th line. For "birds'-eggs" read "birds' legs."

Butalis hypogrammica, Wallace (p. 43). While in England I saw a specimen of this bird in the British Museum, and was struck with its resemblance to my *B. griseisticta*. I allowed myself, however, to be laughed out of the idea of their identity, and so did not compare the two together. I suspect this will prove to be another of our summer visitants that find winter-quarters in the Indian archipelago.

Allusion is made (p. 47) to the *Microscelis amaurotis* "of China." It ocurs in Japan, whence it was originally described in the 'Fauna Japonica.' Has it ever been brought from China?

I will conclude these remarks with a prayer that in future all my past notes on Chinese Ornithology, in the 'Ibis,' be read in conjunction with my "Catalogue of the Birds of China," published in the 'Proceedings of the Zoological Society' for 1863. This last embraces all the latest comparisons made, and identifications worked out, by myself before leaving England.

With regard to Flamingos, though not included in our humble fauna, I should like to record one little fact, which I had the pleasure of communicating some time since to Mr. Darwin. An uncle of mine, who has been in his day a great Indian sportsman, informed me that he once shot a Flamingo, the legs of which were covered with barnacles (*Balani*). Now the Flamingo is known to sit on her nest with her legs dangling over the sides, and, I presume, continues to sit, like some other birds, until the young are hatched, the male feeding her during the period. Flamingoes are stated to pile up their nests in shallow water. We may infer, then, that the bird in question had built her nest in a shallow into which the salt-water flowed, and that she continued to keep her legs submerged in the briny liquid until the barnacles formed. I know no other way of accounting for the phenomenon. The truth of this solution might be tested by ascertaining how long it usually takes for an object submerged in the sea to contract barnacles, and to compare this when ascertained with the term of the Flamingo's incubation.

In Mr. Tristram's "Ornithology of Palestine" (Ibis, 1865, p. 77) is the remark that species "which resort to the highest latitudes for nidification also pass further than others to the southward in winter." This my experience in Eastern Asia quite enables me to confirm, and, to some extent, the axiom reversed. But I want more data before I can bring forward much that is of value on the important subject of migration of birds. *Cypselus galilæensis* (shown subsequently by Dr. Sclater to be no other than our Indian friend *C. affinis*) in habits corresponds very nearly to our own *C. subfurcatus.* The Bulbul of Palestine is a fine songster (p. 81); so is our affine *Ixus chrysorrhoides,* and I suspect all of this plain-coloured group, which are, in most of the species, adorned on the *crissum* with carnation or saffron. The green-tinted Bulbuls, on the other hand, are simply noisy chatterers. *Drymœca gracilis* (p. 82), I before pointed out, is not a typical *Drymœca,* but a *Suya.* I see Mr. Blyth (p. 44) identifies it with his *S.* (*Burnesia*) *lepida* of India. The colour of its eggs alone would appear to separate it. The typical *Drymœcæ* have bluish eggs, with brown and claret-coloured blotches and streaks.

I am told that some consider my *Oreoperdix crudigularis* (Ibis, 1864, p. 426) an *Arboricola.* That this Formosan bird is allied to *Arboricola* I am prepared to allow, but I cannot admit it into that genus, at least not into the genus which includes *A. torqueola* of India, the only species of the group that I have by me. The specimen of *A. torqueola* that I have here was kindly sent to me by Dr. Squire (of Pheasant fame); and *O. crudigularis* certainly differs from that a good deal in the form of the head and the bill. Ours has a much more rounded or concave wing, with the quills obtusely ended instead of pointed, and its tail is shorter, not surpassing the wings. The legs of the two species are somewhat similarly formed, but those of ours are *red.* I am sending home skeletons of this bird, and I think there will be found a good deal of difference between the osteology of the two. The two species differ from each other far more than many other types of distinct genera. I hate the "furor genericus" so called, but still my conscience at present tells me that I am right in separating these two birds.

On the 23rd of July my northern collector sent me a box of skins from Tamsuy. Among these was a cock *Euplocamus swinhoii,* which had its second long central tail-feather *white* in its inner or upper web instead of *black*; the *rectrices* were, as usual, sixteen in number. There were also a pair—but a pair only—of the Redlegs (*Oreoperdix crudigularis*). These had more black feathers on their throats than ordinary; and I suspect from this that the bareness of the red throat-skin marks the nuptial livery of the bird.

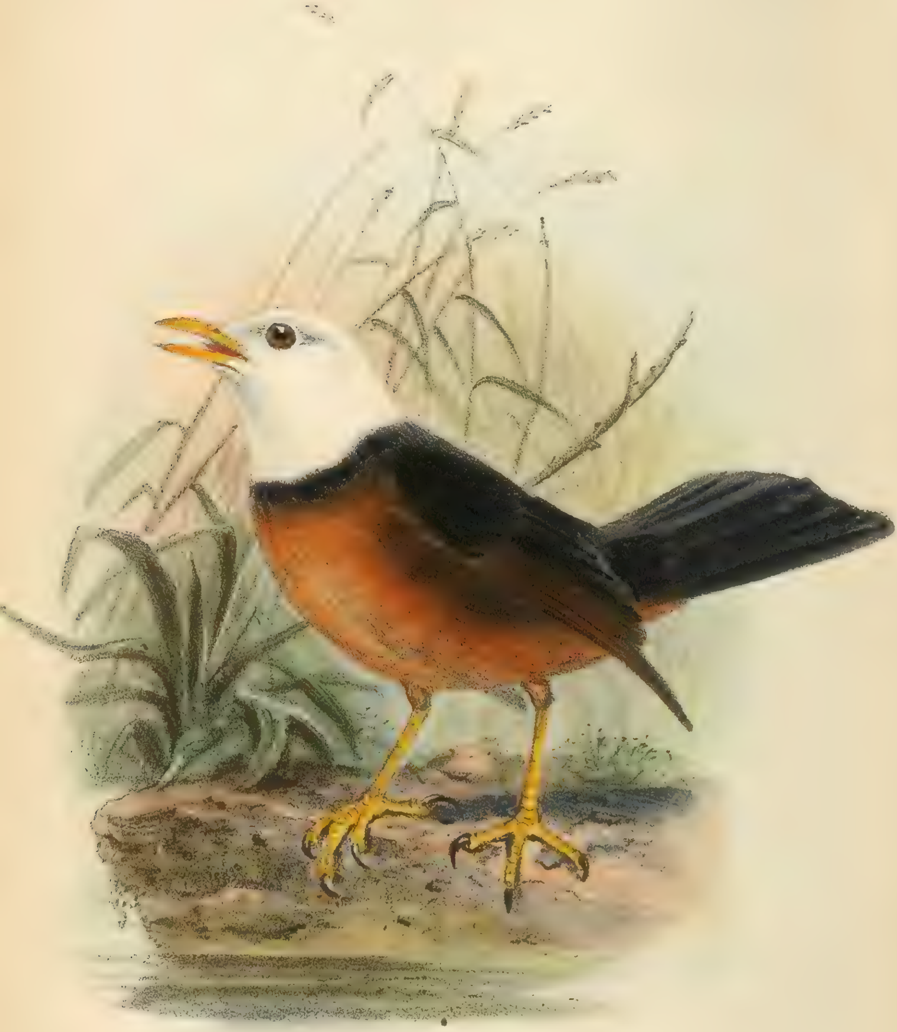
On the 30th of July I was wandering about the alluvial flats between the sea and the city of Taiwan-foo. They were partly under water from the late heavy rains, and were frequented by several mud-birds. I observed *Charadrius longipes*, many of *Hiaticula geoffroyi*, *Numenius uropygialis*, and *Hydrochelidon leucopareia*. These I believe to be all residents in the island, as I have before observed.

To preserve dried skins in a country like this, one is obliged to be ever on the watch against vermin. To say nothing of several species of ants and the little pest moths *Tineæ*, also of many species, a large beetle, which (as Mr. Wallace writes to me) glories in the name of *Dermestes vulpinus*, and a small yellowish-brown beetle of, I think, the same genus, destroy not only the feathers but the skin also. Ye naturalists of England, that sit at home at ease, pity the difficulties with which a brother-in-arms has to contend in the tropics.

August 11th was a fine day, but very hot. I took a ten-mile ride into the country to the banks of a river near the foot of the first range of low hills. In the steep clay banks occurred round holes bored by the Sand-Martin (*Cotyle sinensis*), but the little fellows had finished with them for the year. In a small mango-grove heard the well-known "pic" of a Woodpecker, and soon saw with much pleasure a pair of the small *Picus kaleensis* amusing themselves on the boughs of a mango-tree. On the opposite bank, in a wood, put up a Bamboo-Partridge (*Bambusicola sonorivox*) and a large flight of Night-Herons. The latter appear to have closed incubating-transactions for the season. On returning, in a paddy-field, I put up a white-rumped Green Sandpiper, which I took to be *Totanus affinis*; but more of this species anon.

On August 16th this place was visited by a severe typhoon or cyclone, which lasted for three days. A small party of Terns (*Sterna velox*) were driven into the harbour. On the 17th I saw the first *Gallinago solitaria* of the season.

Ibis 1866 Pl. V



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J. Wolf del et lith. M & N Hanhart imp

TURDUS ALBICEPS

August 23rd.—Another typhoon. Many birds were flying about distressed by the gale. A smallish Tern (*Sterna hirundo* ?) and a Gull-like bird, which I took to be a *Stercorarius*, driven in. All the country saturated with rain. Hermit-crabs (*Pagurus*) in shells of *Buccinum*, sp., climbing up bushes and rocks some way up the hills, and hanging three or four feet from the ground, apparently to avoid the damp. Saw the first Willow-Wren, *Phylloscopus sylvicultrix*, Swinh., the first *Lanius lucionensis*, Strickl., and the first *Reguloides superciliosus* (Gmel.).

September 2nd.—While wandering about the plain in the early morning, I watched several of *Phylloscopus sylvicultrix* and *Lanius lucionensis*. I also observed a Thrush-like bird sitting quietly on the branch of a tree, which at first sight I took for an *Artamus*. I shot it, and to my delight found it to be the young of *Turdus albiceps*, Swinh. (Ibis, 1864, p. 363), the old birds of which new species I had before procured from the Tamsuy mountains*. It appeared to be quite alone. Here is a description of it:—

Turdus albiceps, nobis (typ. spec. of adult procured at Tamsuy March 15, 1864): bird of the year. Length 8 inches, wing 4·36, tail 3. Iris brown. Bill yellowish, washed with olive-brown; at rictus and inside of mouth orange-yellow. Head and neck olive-brown, mottled with ochre. A broad white streak runs over each eye, nearly meeting at the occiput. Upper parts blackish-olive, the coverts streaked with reversed arrow-heads of ochre; the dorsals and upper tail-coverts but lightly streaked. Primaries and winglet black, with paler edges. Secondaries also black, washed on their outer webs with blackish-olive. Tail of twelve mucronate rectrices, black, washed with olive. Under parts orange-buff, speckled and mottled with olive, washed on the sides with olive and grey. Throat and vent dull white. Sides of breast deep olive, with broad ochreous centres, often shaped like arrow-heads. Under wings and tail blackish-grey. Legs and claws bright brownish-yellow.

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* [Through the kindness of M. Jules Verreaux we are enabled to give a figure (Plate V.) of the adult male of this fine species, discovered by Mr. Swinhoe in March 1864, and described by him, as referred to above, in the former series of 'The Ibis.'—Ed.]

The immature plumage of this species shows a resemblance to that of *T. cardis* and *T. sibiricus*—to that of the latter in having spots on the wing-coverts. Our species in this stage is more *melanistic*, and is a more typical *Merula* than any I know. It has not the Turdine under-spots of either the *T. cardis* or the *T. sibiricus*, which both of them partly retain till the completion of their second year. It even makes more advance towards the *melanistic* form of *Turdus* (or *Merula*) than even *T. mandarinus* or *T. merula*; I mean it is more alienated from the Turdine or primary Thrush-characters of the group.

On September 4th I nearly lost my life, being sucked under a cutter, moored athwart the tide, while out for a morning swim in the harbour. I mention this to account for my late dilatoriness. My system received such a shock that I was next to useless for more than a fortnight after it. I received the same day a box of specimens from Tamsuy. I could not attend to them, and they were consequently put away. In overhauling them lately, I find some interesting things among them which deserve special notice; but in the midst of Reports and Returns which overwhelm me at the end of each quarter of the year, I have not yet had time to draw up careful notes. The box in which these specimens were stored was neglected, and the outturn was in a sad state. O, *Dermestes vulpinus*, that thy bump of destructiveness were a little smaller!

September 7th.—Another typhoon, finished off to-day with a south-easterly gale, brought to our harbour a large flock of Dunlins (*Tringa alpina*) and some more small Terns.

The live Buzzard (*Poliornis poliogenys*) that I before mentioned [Ibis, 1865, p. 545] as being in the possession of a friend of mine at Taiwan-foo, he subsequently gave to me. Its legs and a basal belt on the culmen of its bill were of a fine orange-ochre; its irides a fine clear yellow. It always held its head inclined to its right shoulder. I much desired to get it safe to England as a present to the Gardens; but it unfortunately died soon after reaching Hongkong, though it had lived in captivity in Formosa for many months.

September 19th, I saw the Rock-Thrushes, *Petrocincla manillensis*, about the houses of the town. They are now regular in their attendance, chasing flies on the roof-tops and about the verandahs, and occasionally delighting us with their song.

September 23rd, I came across a small party of Curlews, *Numenius uropygialis,* feeding on the mudflats on the banks of the river, and knocked over three, but only succeeded in bagging two. They were much tamer than *N. arcuatus*; their note has a much deeper trill; and the sound birds did not gather and wheel round and show concern for the wounded as do the winter-species: my exposing a wounded bird for a decoy only resulted in the loss of the specimen itself. Of the two I secured, one exceeds the other a good bit in the length of bill, wings, legs, and toes. This I took at first to be a sexual difference; but on dissection they both proved to be females; and on subsequent examination of the *sterna,* I find that that of the smaller specimen is less developed, and I conclude therefore that the lesser bird was simply the younger. In a grove along the avenue at the inner foot of Apes' Hill I heard the unmistakeable "pic" of the small Woodpecker (*Picus kaleensis*), and soon had the satisfaction of procuring the pair. The gizzards of the small Curlews above-mentioned contained remains of small crabs, were muscular, and like inverted saucers, as in the Rails and *Rhynchæa.* The cæca were long and vermiform, and the unique cæcal appendage (shaped like, and the size of, a full-grown blowfly-maggot) occurred on the intestine about a foot from the anus. With respect to this appendage, and to the shape of the stomach, *Rhynchæa* approaches *Numenius*; but in the relation of their *sterna* they stand widely apart. That of *Rhynchæa* is Scolopacine, while that of *Numenius* is Totanine, having double open *foramina**. In its Ralline affinities and plumage *Rhynchæa* is analogous to *Eurypyga helias,* and may be considered an outstanding genus among the *Scolopaces,* much as the latter is among the *Ardeæ.*

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* [The number of foramina or emarginations at the posterior end of the sternum in Snipes, Sandpipers, and kindred groups is by no means constant in the different generally recognized genera, as our contributor seems to suppose. *Scolopax gallinago* and *Totanus ochropus* have each a single emargination on each side of the keel, while *Scolopax gallinula* and *Totanus glareola* have double emarginations. It would be easy to enumerate many more instances; we only mention these to show that the terms *Scolopacine* and *Totanine* as indicating different types of structure in the sternum are insufficiently precise.—Ed.]

September 28th, I met with small parties of *Hetærornis sinensis.* They wend their way southwards from Amoy at this season; but what they do in Formosa during their migrations I cannot make out. They were here, as I before remarked, in spring. I have not found them resident during summer in Formosa; and they are not quoted from Japan, or known in North China. They occur here scantily when they are met with, and I fancy they are blown off their course to our shores. *Motacilla boarula* and *Budytes taivana** have returned from the hills. The latter is now abundant enough in the flats and fields. Swallows and Sand-Martins are wandering about without a settled habitation. Walking along the avenue this morning my attention was attracted by a Halcyon's scream, and two birds, one chasing the other, dashed through the thicket. The first bird I was not quick enough to catch sight of. The pursuing bird was an Oriole (*Oriolus chinensis*). The Oriole discontinued the chase, and, perching on a tree not far from me, began to whistle its absurd attempt at a song, as if glorying in the defeat of its enemy. It was a mature bird, and looked very showy in the sunlight. The colour of the iris was not red, but just as I have described before. On returning I came close on the *Halcyon*: it was *H. coromanda,* a rare bird in the low country. I was so fascinated in watching the lovely pink-plumaged fellow, that I let slip the opportunity of securing him. He was very impatient of being watched, and flew as I followed from one tree to another. Once he dashed against some leaves, and flew back to his perch, as Flycatchers are wont to do. He appeared to have caught something; but what it was I could not see.

Takow, S.W. Formosa,
1 October, 1865.

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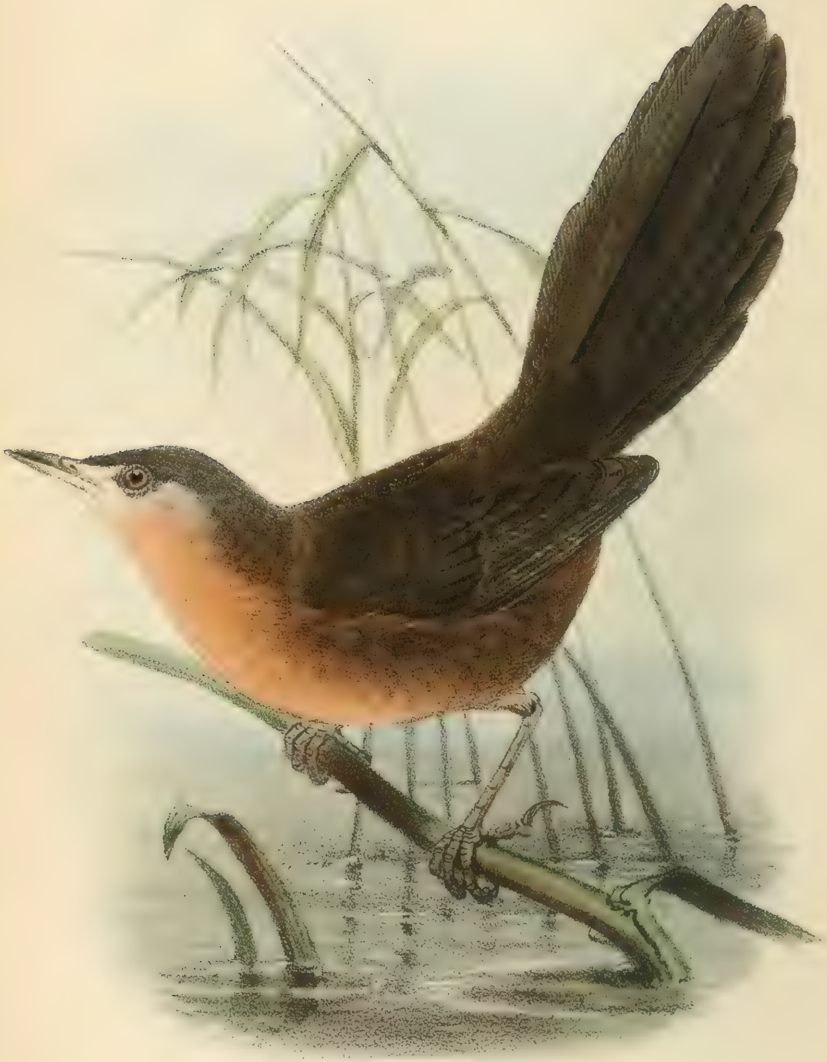
* [This word is not quite plain in the manuscript. If it has been rightly read, we may mention that we are not aware that the Yellow Wagtail of Formosa, probably indicated by it, has been yet described as a distinct species (*Cf.* Ibis, 1863, pp. 309, 310).—Ed.]



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PHLEXIS LAYARDI

XII.—*On a New Genus of African Birds.*

By Gustav Hartlaub, M.D., For. Mem. Z.S., &c.

(Plate VI.)

Phlexis, gen. nov.

Char. gener.: —

Rostrum rectum, mediocre, emarginatum, gracile, subulatum, apicem versus compressum, valde carinatum, gonyde dimidio apicali adscendente; setis rictalibus vix ullis; naribus in fossa majore positis, operculo magno fere clausis.

Alæ breves, caudæ basin vix superantes, fornicatæ, debiles, truncato-rotundatæ, remige primo minimo, quarto et quinto subæqualibus omnium longissimis.

Cauda elongata, valde gradata, mollis; rectricibus latiusculis, scapis parum rigidis, pogoniis mollibus, subpellucidis, quatuor intermediis æquilongis.

Pedes satis robusti, tarsis antice scutellatis, digitis externis et internis æquilongis.

Ptilosis mollis, laxa; plumis tergi, uropygii et hypochondriorum valde elongatis.

Phlexis layardi, sp. nov. (Plate VI.)

Supra olivaceo-fusca, cauda subrufescente; subtus fulvo-ferruginea; abdomine pallidiore, in colorem isabellinum vergente; regione parotica conspicue cinerascente; hypochondriis dorsi colore adumbratis; loris subrufescentibus; rostro nigricante, mandibula ad basin pallida; pedibus dilute brunneis.

Long. tot. 5″ 10‴, rostri a fronte 5‴, alæ 2″ 2‴, caudæ 2″ 9‴, tarsi 9‴.

Hab. Natal (*E. L. Layard*).

The type of this very interesting and well-defined new African form is *Bradypterus victorini* of Sundevall (Zoolog. Anteckn. Victorin. p. 29)*, a rare and little-known bird, which has hardly anything to do with the genus *Bradypterus* of Swainson, this latter having been originally formed for the "Pavaneur" of Levaillant† (*Sylvia brachyptera*, Vieillot).

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* [*Cf.* Ibis, 1861, p. 203.—Ed.]

† The true "Pavaneur" of Levaillant being unknown to me, I wrote for the specimen in the Berlin Museum, which Cabanis (Mus. Hein. i. p. 43) considers to belong to Levaillant's species, and which, judging from his description, must be a female. This I have examined most minutely, and have arrived at the following results:—The "Pavaneur"

On the other hand *Bradypterus sylvaticus* of Sundevall (*op. cit.*) seems to be a typical species of that genus; but the *B. brevirostris* of the same author is nothing but *Catriscus apicalis* of Cabanis. The genus has been thrown into further confusion by Lesson, who states, "l'Afrique nourrit trois Bradyptères, le *Pavaneur,* le *Coryphée* et le *Grivelin* de Levaillant"! and whose *Bradypterus ruficoccyx* (Descr. Mammif. et Ois. p. 293) has "la queue fourchue"!!

What finally separates our new genus *Phlexis* from the *Calamodytæ,* and more especially from the genus *Bradypterus,* is the great comparative length of the strongly graduated tail, the very concave and very weak wings, the scutellated tarsi, and the whole structure of the plumage. The great development of the under tail-coverts in *Bradypterus,* and their still more wonderful development in *Catriscus,* is entirely wanting in *Phlexis.* The generic position of this last is with the *Malurinæ;* it stands between *Drymœca* and *Sphenœacus,* and shows a very remarkable affinity to the Australian form *Drymodes.*

I should add that the form of the bill is very similar in *Bradypterus* and *Phlexis,* but that it is more slender and more compressed in the former, and that they differ very considerably in the structure of the nostrils.

The two known species of the genus *Phlexis* are therefore—

(1). *P. victorini* (Sundevall).

(2). *P. layardi,* Hartlaub.

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of the Berlin Museum and of Cabanis (probably also of Levaillant) is neither a *Cettia,* as supposed by Cabanis, nor does it belong to my new genus *Phlexis*; but it comes nearer to the latter, from which, however, it differs in its less slender and less subulate bill, in the structure of the nostrils, in its longer, stronger, and less concave wings, in its much less graduated tail, and, finally, in its longer and stronger tarsi and feet. The plumage of the sides and back is also much longer, fuller, and softer in *Phlexis.* In fact the "Pavaneur" is generically distinct from this last as well as from *Cettia,* and stands in some respects intermediate between them. Neither *Phlexis* nor the "Pavaneur" show the curious development of the under tail-coverts, which is very apparent in *Cettia,* and still more so in the nearly allied form *Catriscus.* I abstain from applying a new generic name to the "Pavaneur," but fear that it will ultimately be necessary that this be done.

XIII.—*Account of the late Discovery of Dodos' Remains in the Island of Mauritius*[*]. By George Clark.

Having had the good fortune to discover a considerable deposit of the remains of the Dodo (*Didus ineptus*), I conceive that the particulars of an event so interesting to all lovers of natural history may be acceptable to the readers of 'The Ibis,' and I therefore offer the following statement to its pages.

I have been nearly thirty years a resident in Mauritius; and the study of natural history having been the favourite recreation of my life, the hope of finding some remains of the unique and extinct bird that once inhabited this island led me to make many inquiries and researches, alike fruitless. After many years of expectation, I had given up my efforts in despair, when, some four or five years ago, the late Dr. P. Ayres visited Mahébourg, the place of my residence. We had previously exchanged several communications on subjects of natural history, and on this occasion visited together the site of the old Dutch and French settlements on the coast opposite Mahébourg.

Dr. Ayres suggested to me the probability of finding some remains of the Dodo by digging around the ruins of these habitations; but I did not conceive that the plan offered any chance of success. This locality lies at the foot of a mountain called La Montagne du Grand Port, from which, in the rainy season, such floods pour down as carry into the sea everything resting on the surface of the ground. In fact there is no part of Mauritius where the soil is of such a nature as to render probable the accidental interment of substances thrown upon it. It may be classed under four heads: stiff clay; large masses of stone forming a chaotic surface; strata of melted lava, locally called *pavés,* impervious to everything; and loam, intermixed with fragments of vesicular basalt,—the latter too numerous and too thickly scattered to allow anything to sink into the mass by the mere force of gravity. Besides this, the tropical rains, of which the violence is well known, sweep the surface of the earth in many places with a force sufficient to displace stones of several hundred pounds weight. In the presence of these facts, I remarked to Dr.

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[*] [*Vide suprà,* p. 128.—Ed.]

Ayres that alluvial deposits were the only spots which I thought likely to contain bones of the Dodo, pointing out to him a delta of many acres in extent, formed by the united deposits of three rivers running into the harbour of Mahébourg, suggesting that, by dredging deeply in that mass of alluvium, interesting remains might probably be found.

My attention having thus been drawn to the subject, I passed in review the various localities in my neighbourhood which might offer the most favourable conditions to encourage research. A marsh about three miles from Mahébourg struck me as a promising spot, and I mentioned it as such to several of my friends; but my time being very fully occupied, and my means restricted, I took no steps to verify my suppositions, promising myself, however, to do so at some future period. In September last, some of my scholars, who well know the interest I take in natural history, informed me that a number of Tortoise-bones had been turned up in a marsh much of the same description as that I had noticed. I repaired to this spot, called "La Mare aux Songes,"* and mentioned to Mr. de Bissy, proprietor of the Plaisance estate, of which this marsh forms part, my hope that, as the bones of one extinct member of the fauna of Mauritius had been found there, those of another and a much more interesting one might also turn up.

He was much pleased with the suggestion, and authorized me to take anything I might find there, and to give orders to his workmen to put aside for me any bones they might find. They were then employed in digging up a sort of peat on the margin of this marsh, to be used as manure; and in this they had found a great number of Tortoise-bones of various kinds, with one nearly entire carapace, and also one or two antlers of the Deer now existing in Mauritius †. Some days after, a person picked up among the Tortoise-bones a piece of the shaft of a tibia about four inches long, evidently the bone of a bird.

This, of course, quickened my hopes; and after many fruitless visits to the spot, and inspection of the bones turned up as the work went on, I resolved on sending some men into the centre of the marsh, where the water was about three feet deep; and there, by feeling in the mud with their naked feet, they met with one entire tibia, a portion of another, and a tarso-metatarsus. I informed Mr. de Bissy of my success, at which he was greatly delighted; and he kindly gave me the exclusive right to every bone that might be found there, refusing to some applicants permission to search there, saying that, as the discovery was entirely mine, he considered that I had a prescriptive right to all the bones.

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* "Songe" is the local name of the *Calidium esculentum*.

† [This Deer has been stated by Mr. Blyth (Ibis, 1862, p. 92) to be the *Cervus rusa*, introduced from Java.—Ed.]

The Dodo-bones were imbedded only in the mud at the bottom of the water in the deepest parts of the marsh: not one was found among the Tortoise-bones on the margin, except perhaps the fragment of the tibia just mentioned. Encouraged by success, I employed several hands to search in the manner described; but I met with but few specimens of Dodo-bones till I thought of cutting away a mass of floating herbage nearly two feet in thickness, which covered the deepest part of the marsh. In the mud under this, I was rewarded by finding the bones of many Dodos. There was a much larger proportion of tarso-metatarsi than of any other bones; next in quantity were the tibiæ and the pelves, after which came the femora. Sterna were fewer in number, but more numerous than humeri and coracoids; scapulæ also were more plentiful than the latter. Vertebræ were found in considerable abundance; but it was evident that many of them belonged to different individuals, rendering it difficult to complete a set. Crania were very rare, which I attribute to their having been disintegrated by the roots of plants which insinuated themselves into the openings of the head. Lower mandibles of the beak were found in considerable numbers; but most of them had but one ramus, and in none was the posterior portion with the condyle found *in situ*, though I met with many of these in a detached state. Upper mandibles were extremely rare, having doubtless been destroyed by the same agency as the crania.

I only found one coracoid with the furcula and scapula (which three bones in the Dodo were anchylosed together) entire, but I met with several to which the latter was attached. Ulnæ and radii were so scarce that I found but four in all, and only a single metacarpus. I met with one pair of tarsi belonging to a young bird. Their identity is unmistakeable, and their bulk less than one-fourth of that of the adult.

By far the greatest portion of these bones might be divided into two dimensions perceptibly differing, though not very unequal in size, leading to the belief that the diversity in their respective sizes arose from the difference of sex.

All the specimens appear to have belonged to adult birds; and none bear any marks of having been cut or gnawed, or of the action of fire. This leads me to believe that all the Dodos of which the relics were found here were denizens either of this marsh or its immediate neighbourhood, that they all died a natural death, and that they were very numerous in Mauritius, or at least in this part of it. The astonishment of some very aged creoles, whose fathers remembered Labourdonnais, at seeing a quantity of bones of large birds taken from the mud in this marsh, was really ludicrous. "How," said they, "could these bones have got there? Neither our fathers nor our grandfathers ever knew of any such birds, or heard of such bones being found." Some of the bones bear evidence of having been chafed by being carried along in a current of water. In a great many, decay has begun at the extremities; and numerous fragments were found, the fracture of which appeared to me to have taken place when the bones were dead and dry. Some specimens were so fresh in appearance that they might have been supposed to belong to animals recently killed: these were found near springs, of which there are two or three in the marsh. Others were as black as ebony; and some found by the side of a "Bois de Natte" tree (*Labourdonneia revoluta*) were nearly the colour of mahogany, but became much paler in drying.

Bones of the same sort were found mostly near each other, one spot containing many pelves, another several sterna, and so on.

Among the bones of the Dodo were found many belonging to the Flamingo, formerly abundant in Mauritius; to the Whimbrel, still common there; to the Gallinule, also plentiful at present; and to the Egret, which has disappeared within the present century. Bones of Deer, Pigs, and Monkeys* were also discovered. The Deer's bones only were found in juxtaposition, so as to render it probable that the animal had died on the spot in which they were found.

All the Dodos' beaks wanted the horny tip which clothed them in their original state. Several of them were larger than that represented in the plate in Strickland's work.

Not a single bone of the phalanges has been found, although very diligent search has been made for them. It is possible that, if the marsh in which the bones were discovered could be laid altogether dry, they might be found; but it would be a very tedious and costly work to drain off the water, even in the dry season, as springs rise in it.

The Mare aux Songes comprises an area of four or five acres. It is about a quarter of a mile from the sea, from which it is separated by low sandhills and basaltic rocks. It was originally a ravine, the bottom of which consisted, like that of most ravines in this country, of masses of basalt varying in weight from a few pounds to several tons. It receives the drainage of about two hundred acres, inclining towards it by a gentle slope. In the course of ages the interstices between these masses of basalt have been filled up by alluvium. A luxuriant growth of fern, sedge, and flags has spread from the borders over the deeper parts of the marsh, forming a mass sufficiently compact to allow of a person's walking across it. This covering, by preserving anything beneath it from the action of the atmosphere, is probably a principal cause of the perfect state of preservation in which the bones under it were found.

The Mare aux Songes and the lands around it were covered with thick forests at the beginning of the present century: now not a tree remains. From its sheltered position and the perennial springs which flow in it, it must have afforded a suitable resort for birds of all kinds, and was probably a favourite abode of Dodos and marsh-birds.

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* [In a "Brief Notice of the Fauna of Mauritius" prefixed to 'The Mauritius Register' for 1859 (p. xliv), it is stated that these Monkeys were "introduced by the Portuguese from Ceylon;" but a specimen sent home in 1861, by Mr. E. Newton, was identified by Mr. Sclater with *Macacus radiatus* of India, a species which is replaced in Ceylon by *M. pileatus*.—Ed.]

Aged persons who have passed their lives in the woods have assured me that there was formerly a sufficiency of wild fruits to maintain any number of birds large enough to eat them, and that there was such a succession of them as would have sufficed for the whole year. Among these fruits may be mentioned *Ficus rubra, F. terebrata,* and *F. mauritiana,* three or four species of ebony, the iron-wood, several species of *Mimusops, Olea chrysophylla* and *O. lancea, Calophyllum tatamahaka* and *C. spectabile, Mithridatea amplifolia, Terminalia mauritiana, Colophonia mauritiana, Tossinia mespiloides* and *T. revoluta*; and I think it likely that the seeds of several species of *Pandanus,* notwithstanding their hardness, may have been eaten by birds whose digestive powers we may imagine to have been equal to those of the Ostrich.

If the Dodo ate animal food, I know of nothing coexistent with it in Mauritius that could have afforded it any considerable supply, except snails, of which the woods which remain still contain vast numbers.

I have opened diggings in several marshes which appeared to me likely receptacles for the relics of the Dodo, but I have not found a single bone except in the Mare aux Songes. Several gentlemen, witnesses of my success there, have made experiments in other places, but have obtained nothing.

Having sent to Professor Owen and Mr. Alfred Newton bones of every kind that I have found, I do not think it necessary to enter into any description of them here, but I hope my communication may still be found sufficiently interesting.

Mahébourg, January 6, 1866.

XIV.—*On some Extinct Gigantic Birds of the Mascarene Islands.*

By H. Schlegel, Director of the National Museum of the Netherlands, F.M.Z.S., &c. &c.

[The interesting events of the last few months, which have done more to put us in possession of facts relating to the extinct birds of the Mascarene Islands than anything else that has happened, at least since the publication of Mr. Strickland's well-known work, have naturally excited much attention among ornithologists. We therefore take occasion to present our readers with a translation of the valuable paper contributed in 1857 to the Royal Academy of Sciences of Amsterdam*, which, being originally written in the Dutch language, is probably unknown to the majority of them, though a translation into German of part of it appeared in the 'Journal für Ornithologie' for 1858. Its reproduction here will of course not be taken as necessarily involving our entire acquiescence in all the opinions of the writer; but at the same time we think it advisable that English naturalists should not be unacquainted with Professor Schlegel's views.—Ed.]

The islands of Bourbon [Réunion], Mauritius, and Rodriguez, which form a natural geographical group and can be classed together under the name of the Mascarene Islands, have been (especially in recent times) the subject of repeated inquiries respecting the large birds which have become extinct, or rather have been extirpated, within the last century or two, and which formerly inhabited these islands, but are not met with in other regions of the globe. Every one knows that the species of these birds hitherto with more or less certainty determined are regarded as belonging to one group only—that of the Dodos, so named because the large species, that of the island of Mauritius, the Dodo proper, is the best known and is especially the most remarkable from the size and shape of its bill. Every one knows, also, that these birds have given rise to several singular, nay even extraordinary, opinions concerning their true form, and that they from the first have attracted the surprise of the unlearned as well as of naturalists.

It will perhaps cause new surprise when I now announce that, notwithstanding these frequent investigations, some large birds formerly existing on the islands above named have been overlooked or mistaken, and that one of them was a species which, in height at least, equalled the African Ostrich, and, further, that it did not belong to the Dodos, but to quite another order of birds.

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* Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. Afdeeling *Natuurkunde*, vol. vii. p. 116.

Remains of these birds have not hitherto been found; but we know them from descriptions and a representation, which perhaps may, if rightly understood, give a better and more complete idea of these beings than the obscure sketch which can be obtained of the New Zealand Moas through their numerous remaining bones.

The description and representation of the largest species, called by Leguat "*Géant,*" is given by that traveller in his narrative[*], a work which, notwithstanding all my former trouble, I have not been able to see till now, and then in both editions together. Before we consider these important documents more closely, we will first examine how far their author deserves the trustworthiness we ascribe to him. To do this properly we must give a concise account of the life and labours of this little-known man, who has deserved the thanks of science.

François Leguat, a French gentleman of the then small province of Bresse[†], in Burgundy, after being deprived of his liberty for four years, through the revocation of the Edict of Nantes, was compelled at last to quit his native country. Like many other French refugees of that time he repaired to Holland, where he arrived 6th August, 1689. Here he learned that the Marquis du Quesne, with the consent of the States General and the Directors of the East India Company, was equipping two vessels, in which the French protestants who wished to leave Europe were to be conveyed to the island of Bourbon, there to establish a colony[‡]. This enterprise became known[§]; and for fear of a fleet[||] which the King of France was going to send to this

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[*] Voyage et Avantures de François Leguat, et de ses Compagnons, en deux isles désertes des Indes orientales. Londres, 1708. 2 vols., 8vo [12mo]. An English version of this work, in one volume, was published in London the same year.

[†] *Op. cit.* i. p. 157.

[‡] *Ibid.* i. pp. 1, 2.

[§] *Ibid.* i. p. 69.

[||] Over this fleet of six vessels was set M. Guiton du Quesne, cousin to our Marquis. The account of the voyage, which lasted from 1690 to 1691, is only known to me in English under the title of 'A New Voyage to the East Indies by Mons. Duquesne." London, 1696. 1 vol., 12mo. Afterwards appeared the journal of an unknown person who had participated in it, under the title of 'Journal d'un Voyage fait aux Indes orienisland, it was so changed that only one ship of six guns and ten sailors was made ready for departure. This ship set sail from the Texel the 4th September, 1690. The colonists on board, eleven in number, among whom was the brother of our Leguat, were all French emigrants. Leguat, who was placed at the head of the expedition, was already more than fifty years of age*. These colonists, with the exception of two, who had but a small fortune, were all well-to-do and of respectable condition, undertaking the voyage for their own pleasure and not through necessity†. On the 3rd April, 1691, they arrived in sight of Bourbon‡; but instead of landing there, the captain steered for the island of Rodriguez, at that time most generally called Diego-Ruys§, where he put them ashore‖. After a sojourn of two years in this, till then uninhabited, island, our colonists left it in a boat, which they had themselves built, on the 21st May, 1693¶, and on the 29th of that month arrived at Mauritius, exhausted almost to death by storms and want. They then proceeded for about a week along the coast, till they came to the Zwarte River [Rivière Noire], where some Dutch families dwelt in huts. This river is twenty-eight miles (*lieues*) from the then Dutch fort Frederik Hendrik**, which lay on the south-east of the island. After staying a month on this river it happened that the Governor of Mauritius, on his annual voyage round the island, arrived in this district; and it followed that he sent our Leguat and his mates to the harbour on the north-west coast, thence to depart to the governor's residence††. They remained in freedom until the 15th January, 1694; but from that time were treated as prisoners‡‡, and for a further abode were transferred to a little rocky islet lying two miles from Mauritius§§. From this islet, they

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tales par une escadre de six vaisseaux, commandez par M. Duquesne.' Rouen, chez Machouel, 1721. 3 vols., 12mo. The levity and wantonness of this narrative, which was principally composed for the then French Minister of Marine, De Seignelai, contrasts very strongly with the earnestness, simplicity, and honesty which mark Leguat and his companions.

* *Op. cit.* i. pp. 3–7.

† *Ibid.* i. p. 69.

‡ *Ibid.* i. p. 47.

§ *Ibid.* i. p. 49.

‖ *Ibid.* i. p. 60.

¶ *Ibid.* i. p. 164.

** [Very nearly the site of what is now Mahébourg.—Transl.]

†† *Op. cit.* ii. pp. 8–12.

‡‡ *Ibid.* ii. p. 21.

§§ *Ibid.* ii. p. 25.

could, at low water, during full and new moon, go to two neighbouring islets, one of which was overgrown with trees*. This banishment lasted more than three years, and Leguat alone was allowed, for the recovery of his health, to stay some time on Mauritius†. Subsequently, on the 6th September, 1696, they were forwarded, but still as prisoners‡, to Batavia, and then finally, but only a year later, released. Hence Leguat shipped, with his remaining companions, on the 28th November, 1697, for Europe§, and arrived in safety at Flushing on the 24th June, 1698‖. Leguat afterwards established himself in Great Britain¶; and in consequence of the approval which his journal of the voyage found among his friends, he worked it up into a complete narrative, which in this new form made the round of his acquaintances, and was subsequently, in 1708, printed and published at their request**. It is dedicated to the celebrated statesman the Earl Gray††, and the preface is dated London, 1st October, 1707.

From Leguat's work we find that he was a man of true refinement and much reading, that he possessed to a high degree the earnestness and piety which characterized the fervent protestants of the time, and that, by his scientific disposition and imperturbable faith, as well as by his oppression and persecution of several kinds, together with his ripe age, he had obtained that unchangeable calmness of mind from which he felt so happy at Rodriguez that, had he not been compelled, he would have never left that resting-place‡‡.

As to his love of truth, we find the contents of his work corroborated by what he says in his preface—"la simple Vérité toute nue et la Singularité de nos Avantures sont le corps et l'âme de ma Rélation"§§. Among naturalists he has hitherto been known only by his account of the *Solitaire* of Rodriguez; but every one has accepted it without hesitation, and the remains of that bird, since discovered, have proved the exactness of his statements. Besides this it appears also, from the numerous observations which he communicates on known natural objects*, that he was, as an amateur and for his time, an attentive and accurate observer, that he consulted in his investigations a multitude of works on natural history, that by comparing them mutually and with nature he tried to arrive at truth, and that he was anything but a servile repeater of another's words. When, for instance, he obtained the first flying-fish, he examined, described, represented, and compared them with the representations of other authors, discovering at once that there exists among these animals two forms, those now called *Dactyloptera* and *Exocœtus*. He appends for this reason to his drawing the copies of three figures of these fish taken from other works, and on that of Olearius makes the true observation that it had probably been drawn from a dried specimen and was therefore inaccurate; for he says "quand ces animaux-là viennent à se sécher, il est difficile d'en observer la veritable forme." Not less exact are his observations on the birds which at that time were represented under the name of "Flamans." He says†, indeed, that the numerous authors whom he had consulted, except Willughby, attributed to these birds the bill of a Spoonbill; and, in fact, the name of *Flamants* was at that time generally given to large red marsh-birds. The true Flamingo was figured by Willughby, while many others, Rochefort for instance, whom Leguat respectfully quotes, described and figured the red Spoonbill of America (*Platalea ajaja*) under the name of *Flamant*. In his observations on the dorade bonito‡ he quotes Rochefort and Rondeletius, the last of whom he subsequently takes to task severely§; and on this occasion it appears that at the time of his return he took an interest in natural history; for he inserts for comparison the figure of a bonito, which one of his friends had drawn and communicated to him, from an example caught in 1702 on the coast of Kent. His description of the peculiarities of the different kinds of tortoises‖ which he met with is interesting, and he did not overlook the fact that "les os de ces tortues sont massifs, je veux dire qu'ils n'ont point de moelle." His description of the pine-apple*, which he had never before seen, is very characteristic. Speaking of the rhinoceros†, he gives copies of five figures and criticizes the writers whose imagination led them to see several strange patterns on the hides of these animals. That he made the drawings for his work himself and *in loco* appears from his own expression‡ and from the nature of the case. Those which he says were communicated to him contrast not a little with his own by their imperfection or strangeness, as may be seen, for example, in the figure of a lizard from Gilolo, apparently a species of Gekko§.

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* *Op. cit.* ii. p. 38. † *Ibid.* ii. p. 34. ‡ *Ibid.* ii. p. 62.

§ *Ibid.* ii. p. 137. ‖ *Ibid.* ii. p. 174. ¶ *Ibid.* Préf. p. xxx.

** *Ibid.* Préf. p. iii–v.

†† [This is a slight and pardonable mistake of the author. The person to whom the volume is dedicated was Henry De Grey, Marquess of Kent, &c.—Transl.]

‡‡ *Op. cit.* Préf. p. xxx. §§ *Ibid.* Préf. p. x.

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* *Op. cit.* i. pp. 10 *et seq.*

† *Ibid.* i. p. 18.

‡ *Ibid.* i. pp. 20 *et seq.*

§ *Ibid.* i. p. 123.

‖ *Ibid.* i. pp. 89–92.

We deem it superfluous to expatiate further on the numerous other observations which Leguat made on various animals and plants. What we have stated is sufficient to show that we have to deal with a man very different from the thousands or hundreds of thousands who have travelled, and in these days yet travel, in foreign countries for no other purpose than to find a better position than in their own land, to acquire riches in the shortest possible time, and who only observe surrounding natural objects so far as they can be of use to their material welfare. We have here before us one of the few men who have loved nature for itself and not for their own interest—one who, by a longer stay in the magnificent Mascarene Islands, would doubtless have put a stop to the work of annihilation carried on by his less-refined shipmates—since, speaking of the females of the *Solitaire* of Rodriguez, he could say "elles marchent avec tant de fierté et de bonne grace tout ensemble, qu'on ne peut s'empêcher de les admirer et de les aimer ; de sorte que souvent leur bonne mine leur a sauvé la vie"||.

That Leguat wrote his observations not after his return, but on the spot itself, appears not only from the nature of the case, but also from the statements above cited respecting the publication of his journal. Moreover he mentions also that on the islands where he lived he left "*mémoriaux*" enclosed in bottles—at Mauritius in a hole of the rock whither he was banished, at

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[*] *Op. cit.* ii. p. 65.
[†] *Ibid.* ii. p. 146.
[‡] *Ibid.* i. p. 64.
[§] *Ibid.* ii. p. 97.
[||] *Ibid.* i. pp. 99, 100.

Rodriguez in a hole which he made in the trunk of a hard tree[*].

After having placed, as I think, the truthfulness of Leguat beyond all doubt, I pass on to his account of the bird, which I take to be an unknown gigantic species. Speaking of the productions of the island of Mauritius, he says, among other things[†], "On voit * * * beaucoup de certains oiseaux qu'on appelle Géans, parce que leur tête s'éleve à la hauteur d'environ six pieds. Ils sont extrémement haut montez, & ont le cou fort long. Le corps n'est pas plus gros que celui d'une Oye. Ils sont tout blancs, excepté un endroit sous l'aile qui est un peu rouge. Ils ont un bec d'oye, mais un peu plus pointu; & ses doits des pieds separez, & fort longs. Ils paissent dans les lieux marécageux, & les Chiens les surprennent souvent, à cause qu'il leur faut beaucoup de temps pour s'élever de terre. Nous en vimes un jour un à *Rodrigue,* & nous le primes à la main tant il étoit gras: c'est le seul que nous y ayons remarqué; ce qui me fait croire qu'il y avoit été poussé par quelque vent à la force duquel il n'avoit pû résister. Ce gibier est assez bon." This description is accompanied by a figure which represents the bird at about one twenty-fifth of its natural size. I shall now further explain this description and figure. The better, however, to do this and to obtain a more obvious idea of this bird, I have given in Figure 1 [p. 156] the representation of Leguat[‡].

Let us, meanwhile, first examine what has been the opinion of other naturalists about this bird. Hamel and Strickland are, so far as I know, the only persons who have offered their opinions on the subject[§]. They had not the least doubt as to the existence of this large animal; nor can such be possible, since the accounts of Leguat are too precise, and he observed it on two islands at a considerable distance from each other; but they have, in our opinion, completely mistaken this bird.

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[*] *Op. cit.* i. pp. 67, 156; ii. p. 60.

[†] *Ibid.* ii. p. 72.

[‡] In the lecture at the ordinary meeting of the Natural-History Section of the Royal Academy of Sciences on the 31st October, 1857, it was shown of the natural size.

[§] We find also in Valentyn, V. ii. p. 152, some remarks on the *Géant* of Leguat, evidently derived from that author himself. Valentyn's inquiry whether this *Géant* may perhaps be the Dodo needs no further explanation in our time.

Hamel[*] takes it for a struthious bird which, as well as the Solitaire of Rodriguez, has been exterminated since Leguat's time. Our reasons why this opinion is entirely incorrect are the following:—1st, because the *Géant* of Leguat has a perfect tail with quills and under tail-coverts which reach to its end, and that this tail is carried erect, which is never found among the struthious birds; 2ndly, that the toes are extraordinarily long and slender, and not short and very thick as in all known struthious birds; 3rdly, that the gape by no means extends, as in the struthious birds, under the eye; 4thly, that the feet are covered over their whole length and breadth with large plates—and not partially or entirely with scales, as seen in the struthious birds; 5thly, that in Leguat's description and figure there is no appearance of the peculiar form of the feathers of the struthious birds, whereas he makes this to be so distinctly seen in his Solitaire; 6thly, that this bird lived in marshy places, where the struthious birds do not abide; 7thly, that it could fly; and 8thly and lastly, that one had been carried away by a storm from Mauritius to Rodriguez, more than a hundred [about three hundred English] miles distant—a sea-voyage which such heavy birds as the *Struthionidæ* could not possibly perform.

Strickland[†] has perpetually expressed the opinion that this bird has simply been a Flamingo, although the description of it gave him the impression of a Stork. This opinion is really as strange as that of Hamel; for, 1st, the physiognomy or, if you will, the *habitus* of the bird is quite different; 2ndly, neither the figure nor the description of the bill show any resemblance to that of the Flamingo[‡]; 3rdly, the neck of the Flamingo is much longer and very much thinner than in our bird; 4thly, Flamingos have a tail which is much shorter, has a different shape, and is never carried erect; 5thly, the legs in the Flamingo are much longer and for the greater part bare, whereas in our bird they are covered with feathers pretty nearly as far as the tarsus; 6thly, the Flamingo has much shorter fore-toes, united by a swimming-membrane, and an extremely small hind-toe, whereas in our bird, both according to the figure and to the description, the toes are extraordinarily long and quite free; 7thly, the colour of the Flamingo is in the young grey, in the old more or less generally red, and never white as in our bird; 8thly and lastly, the whole of Strickland's supposition fails, seeing that, as we have mentioned above, Leguat knew very well what sort of appearance a Flamingo had.

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[*] "Der Dodo, die Einsiedler und der erdichtete Nazarvogel" in the 'Bulletin Phys.-Math. de l'Acad. de St. Pétersbourg,' 1848, vol. vii. Nos. 5, 6 [pp. 65–96].

[†] The Dodo, &c., pp. 60 and 64. Strickland's own words are "The fact is that these *Géans* are evidently (notwithstanding the Stork-like aspect of Leguat's plate at page 171) *Flamingos.*"

[‡] Leguat's expression, "ils ont un bec d'oye," should evidently, and especially from the addition of "mais un peu plus pointu," be understood as having reference to the form in general, and not to the *lamellæ* which the bill of the Flamingo has in common with that of the Geese. When Leguat says of his *Solitaire* (i. p. 98) "les mâles ont les pieds de coq

For ourselves we do not hesitate a moment to declare that this *Géant* of Leguat's was a Waterhen, and this for the following reasons:—1st, this bird has the *habitus* of the Waterhens to such a degree that anybody who has a little experience in the recognition of animal-forms will take it for one; 2ndly, the extraordinarily long toes argue to the same conclusion; 3rdly, the form of the tail, with the under-coverts reaching to its end, and its erect attitude, is exactly as in the Waterhens; 4thly, Leguat's figure shows distinctly that the upper mandible was prolonged in a kind of rounded plate, which extended over the forehead and eyes, just as we see in the more typical Waterhens, namely *Gallinula, Porphyrio,* and *Fulica*; 5thly and lastly, Leguat's expressions "gibier" and "assez bon" can also be applied to the Waterhens.

When we have agreed that this bird belongs to the family of Waterhens—and I really do not know in what other group we could with any probability place it—then arises the question, under what genus of this family could we more positively arrange it. That it cannot be regarded as a Coot (*Fulica*) its toes, not bordered by lobed membranes, show. It should therefore be assigned rather to the genus *Porphyrio* or *Gallinula*;

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d'Inde, et le bec aussi," we, in like manner, do not conclude that these parts were formed exactly as in the Turkey, but that they had a general resemblance.

for one could not account it a Rail (*Rallus*), as it carries its tail erect and has a frontal plate, any more than a Crane (*Grus*), which genus is most allied to *Rallus**. The genus *Porphyrio*, though zoologically and geographically very natural and so very conspicuous by the more or less fine blue colour of the feathers, differs really from *Gallinula* in no other respect than in the higher bill and oval nostrils, while these in *Gallinula* are more elongated. Since, then, the figure of our bird shows elongated nostrils, and also a bill (so far as one can determine its form in the plate, where it is represented as seen from above) which seems to have been less high than in *Porphyrio*, and, finally, since its colour is very different from that of *Porphyrio*, we must accordingly range it under the genus *Gallinula*.

Fig. 1.

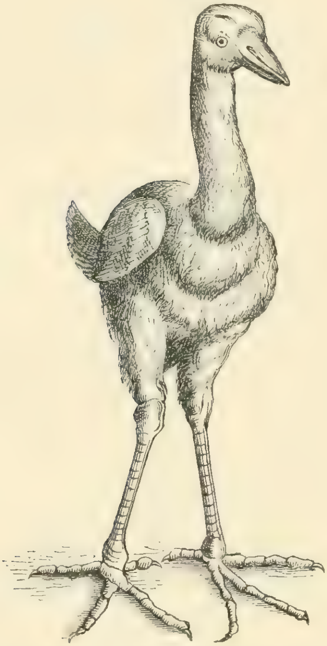
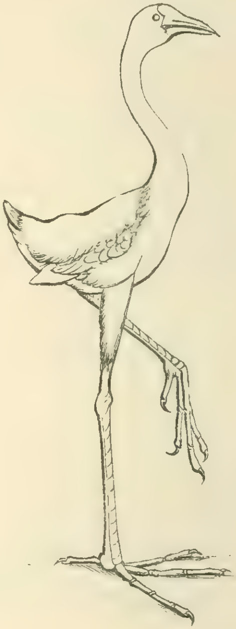


Fig. 2.



We will now examine how far the exact proportion of the various parts of our bird is observed in Leguat's figure. Since even in our day, except Wolf, artists can hardly be found who are without failings in this respect, so can we much less expect that the contrary has been the case at the time Leguat lived and with a mere amateur—especially, too, as his figure represents the object in such a remarkable reduction as one twenty-fifth. We have already remarked, in our treatise on the Dodos *, that in the existing rude drawing of that bird from Mauritius, in Van Neck's voyage, it is much more naturally and truthfully delineated than in the figures of all European artists up to this time, by whom the poor Dodo has been transformed into a real monster, and wherein the hind-toe of the foot in the foreground is always wrongly attached and stands in a crooked direction. Now, although the habitus of the *Géant* in Leguat's figure is very well drawn, although the attitude of the feet, especially of the toes (notwithstanding the representation in perspective), in this plate betrays much more study from nature and more attention than the painters of the Dodo liked to give, yet the drawing of Leguat also has its evident faults. In inspecting my copy of this figure, enlarged to the natural size, it is directly obvious that the body, instead of being the size of that of a Goose † (as Leguat's description says), almost equals that of an African Ostrich. It is quite possible that the head, which is very often represented by the best artists as too big proportionately, is also too big here, and consequently that the neck should be thinner. The same remark is perhaps to be made with regard to the feet, which should be longer just as much as the body is too thick. As it, however, would be very presumptuous to make further inferences in this respect from pure analogies, we limit ourselves here to these remarks. But in order to make them more obvious to the eye, we have prepared a new drawing of this bird of the natural size, in which we have introduced the corrections just mentioned. We have here represented the bird in profile (see Fig. 2) that one may gain a better idea of this animal—especially as Leguat has so drawn the tail (apparently that it might be better shown), and not half or three-fourths turned as are the remaining parts.

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* [*Cf.* Ibis, 1865, p. 533.—Ed.]

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* [Versl. en Mededeel. Konink. Akad. Amsterdam, 1854, pp. 232–256. —Ed.]

† There arises, however, with me the question whether in this comparison he meant the body with, (or as sportsmen often do) without the feathers. In the last, probable case, the body will have had, as occurs in the Waterhens, from their long and loose feathers, a much more considerable bulk than that of a Goose, the feathers of which are short and closely compressed.

When we compare this bird with other species of the Water-hen- or Rail-family, we shall observe that, although constructed precisely on their ground-plan, it differs from them in several respects, especially in its gigantic size, its tall figure, its long neck, its proportionally very small body, and its white colour. One might, for the three first reasons principally, regard it as representing the Crane-form among the Waterhens. Notwithstanding that it far exceeded in height even the largest of marsh-birds, its weight would yet be, in proportion to this extraordinary height, but very little, and with the help of its long toes it would consequently be able, as the Waterhens do, to run over marshy plains without sinking. Although it could fly, it had much trouble, according to Leguat, in rising from the ground; and its flight was doubtless slow and difficult, owing to the shortness of its wings and the length of its legs and neck. It is probable that, like all Waterhens, it could run fast, though not fast enough to escape from dogs, as Leguat states that they could catch it, and that it tried to save itself by flying up. As all marsh-birds, at least when they are obliged, can swim, and Waterhens in particular swim voluntarily and even very much, so this bird also will have swum regularly, and probably very well, owing to its light weight and the extraordinary development of its legs and long toes serving as oars. There is also no reason to suppose that its food and way of breeding would have been very different from that of the Waterhens. It was doubtless a stationary bird, being unfitted for migration; and there was no occasion for it to undertake voyages. This seems to be all that one can, with any probability, guess concerning its mode of life. Why, however, was this Waterhen so gigantic? Why was this gigantic animal just destined for such a small place on our globe—a place where were neither great rivers nor extensive marshes? Why should it be in colour entirely white, and differ in that respect from all other species of the family*? Human knowledge fails to answer these questions, and they will accordingly, it is probable, always remain riddles to us, the more so as this magnificent creature, like so many others, is withdrawn for ever from our gaze.

We have still another question to decide, how it comes that Leguat is the only writer who has observed this gigantic Water-hen of Mauritius, while the voyagers who visited the island before him speak of several other most remarkable birds which they met with, but not this one. To explain the fact, one must evidently infer that the voyagers only made mention of the productions which they met with in the neighbourhood of their anchoring-places, and that the giant bird of Leguat did not frequent those places, because there were no marshes. This is no doubt the case with the harbour on the south-east coast where the ships regularly came to land, and where stood, in Leguat's time and long after, the only port in the island. All travellers report that the ground then was stony and unfruitful. It was at this place that the companions of Van Neck and his successors observed the Dodo and the other birds which they describe. One must therefore suppose that Leguat and his comrades, who passed through the wildernesses lying on the other side of the island, where fowling furnished them without trouble with abundant food†, met with our gigantic bird by the rivers and marshes of these districts, while they were unknown to those who from time to time landed and again departed, as well as to the Europeans dwelling in the fort. In Leguat's time, however, there were, besides the Europeans dwelling in the fort, from thirty to forty Dutch families scattered over the island and there established*. They lived partly by hunting, and had dogs expressly for this purpose†. These Europeans living apart, the dogs (which, as we have seen from Leguat, easily overpowered the gigantic birds), the cats, and later, perhaps, the runaway negros have probably thus silently continued the work of destruction, and also completely extirpated this remarkable animal. How quickly and secretly such a destruction can be effected is proved, among other instances, by the history of the different species of Dodos on the Mascarene Islands. Even the great Dodo of Mauritius, first made known in 1598, was no more mentioned by any traveller after 1681‡; and Leguat, who recorded so many observations on the productions of the countries which he visited, makes no mention of this strange bird. It must therefore be inferred that the Dodo, when Leguat was in Mauritius, was already extirpated, at least in the inhabited and accessible districts of the island§. Perhaps, also, the abode of this bird, in contradistinction to that of the gigantic Waterhen, was limited to the stony dry places which are round the south-east harbour, where it was observed in great numbers, and at which spot all the accounts of this bird were obtained.

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* [Since Prof. Schlegel's paper was written, attention has been called to the White Gallinule, figured in Phillip's 'Voyage to Botany Bay,' &c., London, 1789 (p. 273), and in White's 'Journal of a Voyage to New South Wales,' &c., London, 1790 (p. 238)—a bird which is said to have formerly inhabited Lord Howe's and Norfolk Islands. This species Dr. von Pelzeln refers (Sitz. Akad. Wien, xli. p. 331) to the genus *Notornis* (*Cf.* Ibis, 1860, pp. 422, 423); and Mr. G. R. Gray (Ibis, 1862, p. 240) to that of *Porphyrio.* We only know of two specimens still existing, one at Vienna, obtained from the Leverian Museum, the other in the Derby Museum at Liverpool, from Bullock's collection. It would be very interesting to know if the bird is still found on either of the islands named, and we trust our ornithological friends at the antipodes will endeavour to ascertain the fact. It is the *Gallinula alba* of Latham.—Ed.]

† Leguat, *op. cit.* ii. p. 9.

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* *Op. cit.* ii. p. 64.

† *Ibid.* ii. p. 10.

‡ In 'A Coppey of Mr. Benj. Harry's Journall when he was cheif mate of the Shippe Berkley Castle Captn. Wm. Talbot then Commander,' &c., a manuscript in the British Museum (see Strickland, 'The Dodo, &c.,' p. 36), is found the last mention of the Dodo in Mauritius.

§ Leguat himself (ii. p. 71) speaks of the extraordinary decrease of the animals of the island in the following terms:—"L'Isle étoit autrefois toute remplie & d'Oyes & de Canards sauvages; de Poules d'eau; de Gelinotes; de Tortues de mer & de terre; mais tout cela est devenu rare. Les Lamentins mêmes & d'autres animaux marins se sont éloignez, depuis qu'on a commencé à leur tendre des pieges." With respect to the Dugong, which is the Lamentin of Leguat, we may observe that this large marine animal has not occurred for a long period on the coasts of the Mascarene Islands; while in Leguat's time (i. p. 95) it was found in great numbers on the coast of Rodriguez, and was so tame that a man could walk into the middle of a herd of these animals, feel them, pick out the best, and kill them on the spot or drag them to land.

It remains for us to inquire whether the *Géant* of Leguat was also found in the neighbouring island of Bourbon or elsewhere. The only writer who makes mention of a gigantic marsh-bird in Bourbon, and this under the selfsame name of Géant, is the Marquis du Quesne. His work, which neither Strickland nor I have been able to consult, is only known to us by a quotation in Leguat. Strickland* says of this little work, that it is "drawn apparently as an *emigrant-trap*," and therefore seems to attach but little value to it, or to doubt the trustworthiness of the author. From this possible suspicion we must try to exonerate a man like Du Quesne, who, as his whole life shows, stood socially and morally too high to indulge in such boastings. The Marquis du Quesne who, as a French protestant after the revocation of the Edict of Nantes, had established himself in Holland, with many others of his coreligionists, whose descendants are still living among us, and of whom his Romanist cotemporaries could say, "le grand et fameux Monsieur du Quesne, Lieutenant-Général, qui a mieux aimé renoncer au service et aux honneurs du Bâton de Maréchal de France, que d'abjurer les erreurs de Calvin"†—this Marquis du Quesne had, as we have above mentioned, formed a plan of himself establishing a colony of French emigrants in Bourbon, and on this occasion collected in writing all that was known about the island. Of this little work Leguat says‡, "Il est vrai, que cette Rélation pourroit être suspecte à ceux, qui pensent qu'il étoit de son intérêt de préoccuper les esprits d'une maniere qui fut avantageuse à ce nouveau monde, qu'il avoit dessein d'aller habiter. Mais j'ai premierement à dire sur cela, que M. *du Quesne* ne voulut point qu'on insérât dans ce petit Livre qu'il fit publier, aucune de ces sortes de choses, qui auroient le moindre air d'exaggeration, encore qu'elles passent pour vraies. Et j'ajouterai au second lieu, qu' à *Maurice,* à *Batavia,* & au *Cap,* je suis témoin que tout le monde convient qu'il n'y a rien dans cette Rélation qui ne soit très-conforme à la Vérité."

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* The Dodo, &c., p. 60.

† See the above-mentioned 'Journal d'un Voyage,' &c., by an unknown writer. Rouen, 1721, 12mo, tom. i. p. 3.

‡ *Op. cit.* i. p. 50.

And this judgment will, we hope, be adopted by every one of us. In this little work, according to Leguat*, the *Géans* are named among the birds of Bourbon; and we read further of them, "Les Géans sont de grands Oiseaux montéz sur des échasses, qui fréquentent les Rivières & les Lacs, & dont la chair est à-peu près du goût de celle du Butor." That by these *Géans* the Solitaires of Bourbon cannot be meant, appears by their manner of living, and by the taste of their flesh. To determine them more precisely is not very possible, on account of the incompleteness of Du Quesne's account; but this still shows that there lived in Bourbon a gigantic marsh-bird, which, like the Dodo, has long ago vanished, and which probably was of the same species as the *Géant* of Leguat, or related to it, since it lived by rivers and lakes; and these, with marshes, form the abode of Waterhens.

More uncertain it is whether the birds which were found in these islands by several old travellers, and by them spoken of under the names of *Flamingo* or *Passe Flamingo*, really were Flamingos, or whether under these names were comprehended the gigantic birds of Leguat, or of Du Quesne and Leguat. Herbert†, for instance, enumerates among the birds of Mauritius the "passe Flamingos;" and in Harry's manuscript journal above mentioned occurs the name "pasca fflemingos." Dellon‡ says that in Bourbon one could catch the birds with the hand, or kill them with sticks, adding, "The only ones for which a gun is wanted were called *Flamends*—Flemings. They are as big as a young Turkey, having legs and necks four or five feet in length; the difficulty there is in catching them makes them more scarce than the rest." Reyer Corneliszoon§ also speaks of *Flamencos* in Mauritius. It is probable, too, that Flamingos which were found in Madagascar, as Flacourt* says, should visit Bourbon and Mauritius in their wanderings. The Giant Waterhen, on the contrary, was doubtless not found in Madagascar, since no writer mentions it.

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* *Ibid.* i. pp. 55, 56. In the English translation of this work (London, 1708), which is otherwise very accurate, and in which the original plates are copied with perfect exactness, the word *Géant* (at page 41) is translated by *Peacock*, but later (p. 171) by *Giant*.

† Relation du Voyage, &c., French translation. Paris, 1663, 4to. p. 544.

‡ Naauwkeurig verhaal van een Reyse door Indiën, &c. (Dutch translation.) Utrecht, Ribbius, 4to, 1687, p. 9.

§ Journal, p. 30.

We come now to the second extinct bird of the Mascarene Islands, which, in our opinion, has been completely mistaken by authors. This is the so-called *Oiseau bleu* of Bourbon, described in the manuscript of a certain D. B.†, where [p. 183] we read as follows:—“ *Oiseaux bleus,* gros comme les *Solitaires,* ont le plumage tout bleu, le bec et les pieds rouges faits comme pieds de poules, ils ne volent point, mais ils courent extremément vite, tellement qu'un chien a peine d'en attraper à la course; ils sont très bons.” The size of the *Solitaire* is given in the same manuscript as that of a “grosse Oye”; while Castleton, or rather Tatton‡, and Carré§, both give the *Solitaire* the size of a Turkey. Strickland's|| opinion on this bird runs as follows:—“I should have been disposed to refer the “Oiseau bleu” to the genus *Porphyrio,* were we not told that they were the size of the Solitaire, i. e. of a large Goose, that the feet resembled those of a hen, and that they never fly.” These objections are, however, of no value; for, 1st, we know a species of *Porphyrio* (the *Notornis mantelli* of New Zealand) which is nearly as big as a Goose; 2ndly, there are several species of Waterhens whose feet are like those of a Hen, or, in other words, which have thick feet with toes short in proportion, as, for instance, *Tribonyx, Ocydromus,* and *Notornis*; 3rdly, the wings also of *Notornis* and *Ocydromus* are unfit for flight, and the quills of the last-named bird are even as soft as ordinary feathers. The guarded, though incorrect, opinion of Strickland has been followed by the strange theory of De Sélys-Longchamps¶ concerning the *Oiseau bleu* of Bourbon; for he has referred this bird to one and the same family as the entirely struthious *Solitaire* of Bourbon and the Apteryx-like Dodos of Herbert and Van den Broecke, and has given it the name of *Apterornis cærulescens.* Finally, in Bonaparte[*], where, besides, the greatest confusion prevails with respect to the extinct birds of the Mascarene Islands, the *Oiseau bleu* appears in an independent genus under the name of *Cyanornis erythrorhyncha,* and there is incomprehensibly added, as a synonym of the species, the Dodo of Van den Broecke, while the Dodo of Herbert makes a second species of this compound genus.

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* Histoire de la grande île de Madagascar, 1661, p. 164, under the name of *Sambe.*

† Mentioned for the first time by Strickland in the ‘Proceedings of the Zoological Society’ for 1844, p. 77, and afterwards in his work ‘The Dodo, &c.,’ p. 59.

‡ Purchas, Pilgrimes, 1625, i. p. 331. § Voyages, i. p. 12. || *Loc. cit.*

¶ Revue Zoologique, Oct. 1848, p. 3 [*potiùs,* p. 294].

When we attentively consider the account of the *Oiseau bleu,* every one will be disposed to admit that, though very short, it cannot be applied to any other bird than a *Porphyrio,* and especially, indeed, to the aberrant form of that genus known as *Notornis,* which we would regard as representing the galline form among the Porphyrios, particularly in consequence of the powerful figure, the thick tibiæ (clothed with feathers nearly to the extremity), the short toes, and the short, thick neck[†]. The supposition that this *Oiseau bleu* was such a species of *Porphyrio,* is strongly supported by the fact that the various species of the genus range from the most southern part of Europe, over the whole of Africa, Madagascar, the East Indies to further India, Australia, and New Zealand, and that thus the Mascarene Islands are contained within the geographical area of this form. That the *Oiseau bleu* was bigger than the species of *Porphyrio* known to us is an objection which will fall when we consider that *Notornis* also exceeds remarkably the remaining species; and that the southern hemisphere produces other species of the family more or less gigantic in proportion, and at the same time often different, as, for instance, *Notornis* under *Porphyrio, Tribonyx* and our Giant under *Gallinula, Fulica gigas* of Peru among the Coots, and finally the gigantic and strange *Palamedeæ,* which, however, inhabit the whole of tropical America. That the *Oiseau bleu* had wings not fit for flight must not surprise us, as *Notornis* has similar wings, and as, moreover, a considerable number of other birds in the Mascarene Islands, as also in New

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[*] Conspectus Avium. Leiden, 8vo, ii. p. 3.

[†] For similar reasons we regard *Tribonyx,* or even *Ocydromus,* as the galline form of the *Gallinulæ.*

Zealand, exhibit the same peculiarity: for instance, in New Zealand, besides *Notornis,* there are *Ocydromus,* the Kiwis (*Apteryx*), and the Moas (*Dinornis, Palapteryx,* &c.), and in the Mascarene Islands the different species of Dodos—besides that the wings of the Giant Waterhen seem to have been shorter than is usually the case. Of the *Oiseau bleu* it is said that it ran extremely fast. Although, now, this characteristic belongs to the Waterhens in general, it is yet especially mentioned with regard to *Notornis**. Finally the colours of our *Oiseau bleu,* both of its feathers and its bill and feet, agree with those of *Porphyrio,* and fit, indeed, no other genus of birds of this form, size, or habits.

So much for the "Oiseau bleu." We think, in our remarks on these extinct birds, that we have offered a new contribution to the better knowledge of the exceedingly interesting Fauna of the Mascarene Islands. When we now consider the nature and the distribution of these animals, in connexion with the little spots, scattered in the immeasurable ocean, which they inhabited, and then compare what we observe here and in other regions, whether close to us or far distant, new and entirely wonderful phenomena present themselves. The first that strikes us is that these islands are completely destitute of land-mammals except bats; the second, that they, in proportion to their small extent, harboured a considerable number of birds, which were characterized by their short wings and, further, by their peculiar forms or more than ordinary size; the third, that these wonderful and, in their kind, unique aberrations in this Fauna are not accompanied by similar or somewhat obvious aberrations in the Flora of these islands. Not less striking is the remark, that we see all these phenomena repeated in New Zealand†. We may thus suppose that, in the economy of nature, the place of land-mammals is taken by birds on both groups of islands; and from this we may perhaps infer, again, why the principal birds of those localities exhibit such an extraordinary development and such peculiar forms. Both these geographical groups, in common with most other countries of the southern temperate zone, possess a multiplicity of species, and each of them restricted to certain islands or proportionately small spots; and these phenomena are, perhaps, more striking in the Mascarene Islands than in New Zealand. Both these geographical groups, the Faunæ of which (since the first principles of higher zoology are yet to be determined), for the most part, belong to the past history of the globe, deserve on this account, with the isles of the Pacific Ocean as far as the Sunda Islands, more than other regions, to become the subject of an exact investigation with regard to their fauna. Every right-minded man will regret when he observes how many of these strange and gigantic, but at the same time harmless and even useful, creatures have been extirpated in the regions above mentioned, and have disappeared for ever. He will shudder when he every moment learns that this work of destruction is yet daily being continued; and he will but too well comprehend that man entirely mistakes his earthly mission, and brutally misuses his power, when he disturbs the harmony of creation in such a deeply encroaching way that its original plan is hardly to be recognized. Such researches, however, are beyond the reach of private persons. It is the duty of a government to interfere here. If this is not done, our descendants, instead of ascribing to their forefathers that refinement which we think we have, will regard us as barbarians who only understood how to annihilate, but not to protect or preserve, what was entrusted to us by the Creator.

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* Transactions of the Zoological Society of London, vol. iv. p. 70.

† With the exception of a rat, which, however, has perhaps been introduced by ships, no mammals have been met with in New Zealand, though, according to the inhabitants, one of about two feet long lives, or has formerly lived, there. We may remark here, to prevent any possible misunderstanding, that the first voyagers to India, as appears from many passages in their writings, left on most of the islands or places where they landed all sorts of domestic animals, especially horned cattle and swine,

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the progeny of which furnished them on their later visits with provisions. They also often introduced many other animals; and by this means only can we explain, for example, how the great land-tortoise of the Galapagos has spread to Mozambique, and how Leguat, Herbert, and others speak, some of them of deer, some of monkeys, or even of white Cockatoos with red crests, among the productions of the Mascarene Islands.

The two birds now described by us may be placed in the system with the following attributes:—

GALLINULA (LEGUATIA) GIGANTEA.

"Le Géant," Leguat, Voy. ii. p. 72, fig.

" " Du Quesne *apud* Leguat, *op. cit.* i. p. 55 (?).

"Straussartiger Vogel," Hamel, Bullet. Acad. St. Pétersb. vii. No. 5 et 6 [pp. 65–96].

"Flamingo," Strickland, 'The Dodo, &c.' p. 60 (note).

Stature, six feet high. Body not heavier than that of a Goose. Wings pretty short, but fit for flight. Feathers of the tibia reaching pretty close to the tarsus. Toes long and quite free, those in front about as long as the tarsus. Upper mandible extended in a plate reaching beyond the eye. General colour white, with a reddish spot under the wing. Colour of the feet and bill unknown, but probably not very remarkable, as the description does not mention it.

Hab. Mauritius, perhaps also Bourbon; once accidentally met with in Rodriguez.

Observed with certainty only by Leguat in 1694. Since that time not remarked again, and evidently long ago completely extirpated.

Seems to represent the Crane-type among the Waterhens.

PORPHYRIO (NOTORNIS?) CÆRULESCENS.

"Oiseau bleu," D.B., Manuscript Journal [*penes* Soc. Zool. Lond. p. 183]; Strickland, *op. cit.* p. 59.

Apterornis cærulescens, De Sélys-Longchamps, Revue Zoolog. Oct. 1848, p. 3 [*potiùs,* p. 294].

Cyanornis erythrorhyncha, Bonap. Consp. Av. ii. p. 3 (*except. synon.* Did. broeckii).

Size of a heavy Goose or Turkey. Feet like a Hen's. Colour blue. Bill and feet red. Does not fly, but runs extraordinarily fast.

Hab. Bourbon [Réunion].

Only observed by "D. B." in 1669 [between 1669 and 1672]; never seen since, and apparently extirpated.

Seems, with *Notornis mantelli,* to represent the Hen-type among the Porphyrios.

EXPLANATION OF THE ENGRAVINGS [p. 156].

Fig. 1 is a copy of Leguat's engraving.

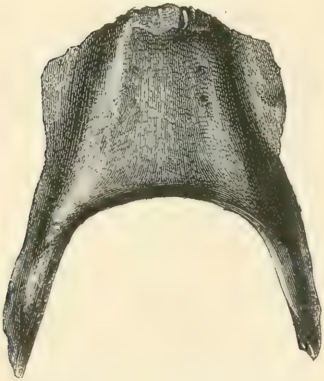
Fig. 2. The same drawn in profile, and amended from Leguat's description.

Both birds represented $\frac{1}{25}$th of the natural size.

XV.—*Evidence of a Species, perhaps extinct, of large Parrot* (Psittacus mauritianus, *Owen*), *contemporary with the Dodo, in the Island of Mauritius.* By Prof. Owen, F.R.S., &c.

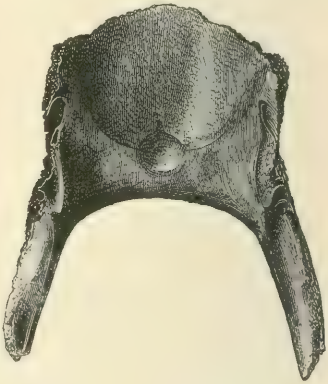
In a paper on the bones of the Dodo, read before the Zoological Society of London, January 9th, 1866, I noted a part of the lower mandible of a large Psittacine bird in the enumeration of the series of bones which had been transmitted to me by Mr. George Clark from the Mauritius.

Fig. 1.



Under or outer view of gonys,
Psittacus mauritianus, Ow.
Natural size.

Fig. 2.



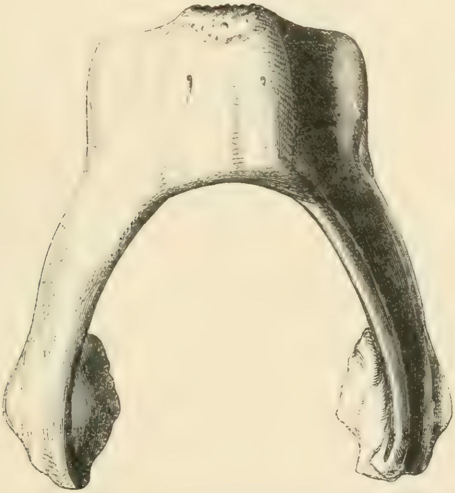
Upper or inner view of gonys,
Psittacus mauritianus, Ow.
Natural size.

This specimen (figs. 1 and 2) has the same deep olive-brown tint as most of the bones of the Dodo, and, from all its physical characters, has been evidently obtained under the same conditions; it may therefore be confidently accepted as evidence of another, perhaps lost, certainly now unknown, species of bird, which formerly existed in the Island of Mauritius. Still, as in all probability the species of Parrot which the present solitary specimen represents had powers of flight, there is the greater probability of some stray representative being still discoverable, like the *Notornis* in New Zealand, in some uncultivated and sequestered part of the island.

The specimen includes the 'gonys' or symphysial part of of the lower jaw, with the thicker inferior part of the two 'rami,' the parts preserved measuring 2 inches in length, and 1 inch 9 lines in breadth. The length of the gonys at the mid line or symphysis is 1 inch, the breadth of the gonys, as far as preserved, is 1 inch 3 lines; but the thin upper or lateral margins have been broken away, at the commencement of the rami, down to their thicker convex inferior border.

The outer surface of the gonys shows a less rounded and more angular transverse convexity than in the *Ara's* (fig. 3.);

Fig. 3.

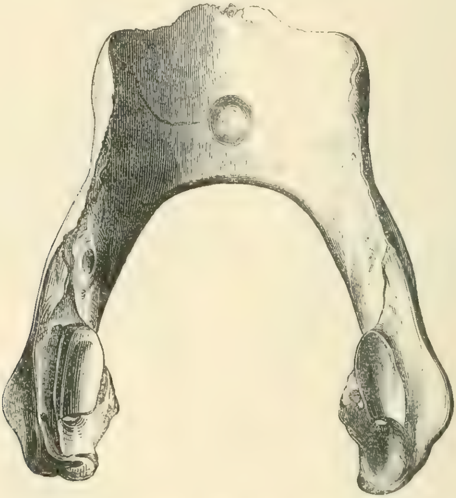


Under or outer view of lower jaw, *Ara macao* (Linn.).

the sides bend up upon the mid tract at almost the same angles as in the lower mandible of the great Australian Cockatoos (*Microglossum*). In the breadth of the back part of the gonys, and in the angles at which the lower borders of the rami diverge backwards therefrom, the Mauritian specimen also resembles *Microglossum* more than it does *Ara*. Near the anterior margin, which is thinned off to an edge, there are, as in the Maccaws and Parrots, grooves and foramina for the small nerves and vessels of the formative part of the horny beak-sheath.

But the most decisive test of the nature of the present fragment is afforded by the characters of the upper or inner surface (fig. 2). This, of course, is concave transversely, and shows a more regular upcurving of the sides of the gonys than the external surface does. It is marked by the curved line, convex backward, which, commencing from near the antero-lateral angles of that surface, extends to a shallow subcircular depression in the posterior third part of the symphysis. A pair of minute foramina marks the anterior border of this depression. The curved line, in recent Parrots (fig. 4), marks the posterior extent of the thin internal horny plate of the sheath of the lower mandible.

Fig. 4.



Upper or inner view of lower jaw, *Ara macao* (Linn.).

In size the Mauritian Cockatoo, represented by the above-described fragment of skeleton, appears to have equalled the Hyacinthine and Blue-and-yellow Aras, or Maccaws (figs. 3 and 4), and the larger Cockatoos (*Microglossa*) of Australia. Mr. Gould has figured a species, *M. aterrimum* (Gmelin), now inhabiting New Guinea, and Cape York on the northern coast of Australia, in the Supplement to his work on the Birds of Australia.

My colleague Mr. George R. Gray has kindly called my attention to the Cockatoo figured under the name of "Perroquet Mascarin"* by Levaillant in his 'Histoire des Perroquets,' vol. ii. pl. 139 (fol., 1805).

In the text Levaillant remarks :—"Le Mascarin se trouve à Madagascar et même, assure-t-on, à l'île de Bourbon. Il est encore très-rare dans nos cabinets; du moins n'y ai-je vu que trois de ses individus, dont l'un chez Mauduit, l'autre chez l'abbé Aubry, et le troisième au Muséum d'histoire naturelle à Paris" (p. 112).

So far as can be judged from the coloured plate of the bird, the lower mandible appears to have the same angular shape transversely, at the lower part of its base, as is manifested by the Mauritian gonys (fig. 1); but it is inferior in size. The *Psittacus pachyrhynchus* of West Africa exemplifies also a similar proportion and form of beak, but is likewise on a smaller scale.

I think I may venture to add the *Psittacus mauritianus* to the list of species of birds of the island of the Dodo, and anticipate with confidence that materials will one day be obtained enabling the ornithologist to determine the subgeneric section of *Psittacidæ* to which this large Cockatoo may belong. Enough is given, even by the solitary fragment described, to show that it has nearer affinities to Old World forms (African and Australasian) than to the New World Maccaws.

XVI.—*On Five New Species of Birds from the Feejee Islands.*

By Gustav Hartlaub, M.D., For. Mem. Z.S., &c.

1. Rallina pœciloptera.

Supra obscure rufo-fusca, subtus obscure plumbea; mento et gula albidis; genis brunneis; fascia brevi poneoculari plumbea; subalaribus nigris, albo maculatis; remigibus ferrugineis, fasciis angustioribus nigris transversim notatis, primi et secundi pogoniis externis nigricantibus, non fasciatis; subcaudalibus plumbeo-nigricantibus; rostro flavido, basi subrubente; pedibus pallidis. Long. tot. circa 14″, rostri 1½″, alæ 6″, tarsi 2″.

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* [*Mascarinus madagascariensis*, Lesson.—Ed.]

Hab. Viti-levu.

One specimen. There are faint traces of white marginal lines on the dark side-feathers. A typical *Rallina*, to be distinguished at first sight from all similar species by the extraordinary colours of the wing-feathers.

2. Cuculus infuscatus.

Unicolor, fuscus, nitore nonnullo metallico, subtus parum pallidior, subcinerascens; flexura alæ alba; remigibus dimidio basali pogonii interni macula circumscripta alba notatis; cauda unicolore nigricante; maxilla fusca, mandibula pallida; pedibus pallidis; iride flava. Long. tot. circa 9½″, rostri 7‴, alæ 4½″, caudæ 4″ 3‴, tarsi 10‴.

Hab. Viti-levu.

One specimen. Belongs to the subgenus *Cacomantis,* and is certainly not the same as *Cuculus simus* of Peale, which latter bird Schlegel very erroneously identifies with *C. cineraceus,* Vigors.

3. Pachycephala græffii.

Supra olivaceo-virescens, subtus intense vitellino-flava; pileo nitide nigro, postice flavo limbato; lineola inter nares et oculos flava; subalaribus flavis; fascia alari parum distincta tectricum majorum apicibus formata flava; remigibus nigris, extus olivaceo marginatis; cauda nigricante; rostro nigro; pedibus plumbeis. Long. tot. 6½″, rostri 7½‴, alæ 3″ 1‴, caudæ 2″ 5‴, tarsi 8⅔‴.

Hab. Viti-levu.

One specimen. A typical species, easily to be distinguished from seven or eight nearly allied birds by the dark gamboge-yellow of the chin, &c.

4. Pachycephala (?) optata.

Supra obsolete olivaceo-brunnea, subtus cinnamomeo-rufa; subalaribus et sudcaudalibus rufis; rostro nigro-plumbeo; pedibus plumbeis. Long. tot. circa 6″ 2‴, rostri 6‴, alæ 3″ 4‴, caudæ 2½″, tarsi 10¾‴.

Hab. Ovalau.

One specimen. Probably the *female* of a new species, the male being yet unknown.

5. MYIOLESTES VITIENSIS.

Supra obscure rufo-fuscus, subtus sordide grisescens, lateribus dorsi colore adumbratis; subalaribus grisescentibus, subcaudalibus subrufescentibus; rectricibus nigro-fuscis, binis lateralibus macula apicali conspicue alba pogonio interno notatis; rostro plumbeo, tomiis et mandibulæ basi albidis; pedibus plumbeis. Long. tot. $6\frac{1}{2}''$, rostri $2\frac{1}{2}'''$, alæ $3''\ 1'''$, caudæ $2''\ 5'''$, tarsi $8\frac{2}{3}'''$.

Hab. Ovalau.

One specimen. Typical of the genus. A nearly allied African form is *Alethe.*

All these birds were collected by Dr. Gräffe, the able collector of Mr. Cæsar Godeffroy at Hamburg, in whose private museum they are now to be seen*.

XVII.—*Notes on the Ornithology of Spain.*

By Lord LILFORD, F.L.S., F.Z.S., &c.

HAVING revisited Spain last spring, as I before stated was my intention (Ibis, 1865, pp. 166–177), I am inclined to think that some further observations on the birds of that country may not be altogether devoid of interest to some of the readers of 'The Ibis.' I was unfortunately prevented by illness from carrying out my schemes of exploring the lower valley of the Guadalquivir and the wilds of the province of Estremadura, which, I believe, are the richest districts of Spain, from an ornithological point of view, both as regards number and comparative rarity of species; but, taking into consideration that my researches were confined entirely to the Castiles, I think that I am justified in saying that I met with fair success; and although I did not discover any new species, I made myself intimately acquainted with the habits of several birds of which very little has, as far as I know, been hitherto recorded.

I was very fortunate in securing, through the kindness of MM. Verreaux in Paris, the services of a first-rate preserver, M.

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* [*Cf.* Ibis, 1864, p. 232.—ED.]

Louis Michel, who had been for four years in their employment, and to whom I am indebted for the excellent condition of my specimens, and for very agreeable companionship during my stay in Spain. We arrived in Madrid, by way of Paris and Irun, on the 3rd of April 1865, and I at once set about trying to obtain permission to explore the *Sitios Reales*, or royal preserves. I found considerable difficulty in making my Spanish friends understand or believe that I only wished to shoot birds for preservation, and not to kill game; and in spite of the great kindness of Her Majesty's minister, Sir John Crampton, and Señor Banuelos, of the Spanish Foreign Office, I did not receive the required authority till April 15th. In the mean time, I had ransacked the very scanty stores of the only two professional bird-stuffers in Madrid, Señor M. Sanches, of the museum in the Calle de Alcala, and Señor Severini, in the Carretera de San Geronimo; but although they both had a good many specimens, some of which were of considerable interest, most of them were in such an extremely bad state of preservation as to be worthless. I, however, managed to pick out fair specimens of *Aquila heliaca*, *Bubo maximus*, *Oxylophus glandarius*, *Cyanopica cooki*, and *Pterocles arenarius*, besides a few eggs. In the markets I met with nothing of great interest, but procured some fine specimens of *Otis tetrax* in full breeding-plumage.

I had been told by several persons that in the grounds of the Casa de Campo, a small country-house belonging to the Queen, to the south-west of Madrid, a good many birds of different sorts were to be met with; and I was particularly recommended to apply to the King's head-chasseur (who lived in these grounds) for information and assistance in everything relating to beasts and birds. Accordingly, on the 8th of April, I sallied out by the Puerta de San Miguel, and, crossing the Manzanares by the Puente de Toledo, soon found myself at the gates of the royal demesne. On inquiry at the porter's lodge I found that Manuel de la Torré, the chasseur above mentioned, was away on a shooting-expedition, but was expected back every day. I roamed about for some hours amongst the groves and alleys of the Casa de Campo, and was much interested by the birds I saw. The beautiful Spanish Magpie, *Cyanopica cooki*, was very abundant, and, by concealing myself and squeaking after the fashion pursued by British gamekeepers for the destruction of stoats, weasels, and the like, I soon gathered twenty or thirty of these inquisitive and lively birds within a few yards of me. I had previously made acquaintance with them in Andalucia, but had not had time or opportunity to watch them closely as I did upon the present occasion. Their notes are very varied, at one time reminding one of the chatter of a flock of Starlings; now and again a Jay-like screech is to be heard, and sometimes a harsh chatter, somewhat like the alarm-note of the Mistletoe-Thrush. The flight and actions of these birds resemble those of the common Magpie, *Pica caudata,* but they are much less shy. I was assured that they did not breed till May; nor indeed did I expect to find them nesting, as, on May 1st, 1864, one only out of some twenty new nests which I found in the neighbourhood of Cordova contained eggs. The Spanish Magpie is a very local species; the principal facts I have been able to discover as to its distribution are as follows:—It is extremely abundant in the immediate neighbourhood of Madrid, and particularly affects the woods of evergreen oak. It is found more or less commonly throughout New Castile, La Mancha, Estremadura, the province of Leon south of Salamanca, and the portion of Andalusia to the north of the great southern Sierras. In the Sierra Morena it is found in myriads, and does considerable damage in the olive-yards and corn-fields. North of the Guadarrama mountains in Old Castile it is comparatively scarce, and, as far as I could learn, is unknown in Catalonia, and extremely rare in Valencia and Murcia. In Portugal, I understand that it is common in the neighbourhood of Lisbon (*Cf.* Ibis, 1865, p. 337), but, never having visited that country, I can only speak from hearsay on the subject. In Andalucia and Estremadura this bird is known as *"Mohino,"* in New Castile as *"Rabilargo,"* and in Leon as *"Ruipego."*

Whilst watching the Spanish Magpies, I heard at a short distance a cry which I at once concluded to be that of the common Buzzard, *Buteo vulgaris.* I advanced quietly through some thick undercovert, and still heard the cry repeated, apparently close to me; but the trees stood thickly together, and I could not for a considerable time discover the bird from which it came. I, expecting to see the Buzzard circling in the air above my head, did not examine the trees closely, until at length I was certain that the bird was in a thick ilex within a few yards, and at length discovered that my Buzzard was nothing but a Jay. I never heard this imitation of the Buzzard in any country except Spain; but there it is one of the most frequent of the Jay's many notes, and so exact a copy as at first to deceive the most experienced ears. The Jay, *Garrulus glandarius* (in Spanish "*Arrendajo*"), appears to be common in most parts of Spain. During my ramble on this occasion in the grounds of the Casa de Campo, I suddenly came face to face with a Scops-Owl, *Scops giu*, which was sitting tightly drawn up against the trunk of an elm about five feet from the ground. We contemplated each other, no doubt with mutual admiration, for some minutes, till the Owl, after bowing politely several times, retired to a thick ilex at some distance, where I left him. This species was then beginning to make its appearance in Castile; a fortnight later it was very abundant, and its melancholy call, "keeyou," "keeyou," to be heard throughout the night, and often during the day, in all parts of the country.

The common Green Woodpecker, *Gecinus viridis*, is very abundant about the Casa de Campo; and on this occasion I also noticed one pair of the Grey-headed Green Woodpecker, *Gecinus canus*, which is, as far as I have been able to ascertain, by no means common in Spain. I certainly never again recognized it during my stay in the Castiles. The Green Woodpecker is known in Spain by the name of "*Pito real*," and appears to be generally distributed throughout the country. The Hoopoe, *Upupa epops* (in Spanish "*Abubilla*"), was just arriving from its winter-quarters in the south, and to be seen in pairs strutting about the sandy paths in the upper part of these grounds. I noticed a few of our British Pied Flycatchers, *Muscicapa atricapilla*, and great numbers of Goldfinches, *Carduelis elegans*, and Serins, *Serinus hortulanus*. Red-legged Partridges, *Caccabis rufa*, constantly rose before me in pairs, and their cackling call-note resounded on all sides, while great numbers of Woodpigeons haunted the ilex-groves. These last birds were still in flocks, without, apparently, any present intention of nesting. The Great and Blue Titmice, *Parus major* and *P. cæruleus,* were very abundant; and I noticed on this occasion, besides the species above mentioned, *Hirundo rustica, Sylvia atricapilla, Ruticilla phœnicura, Erythacus rubecula, Philomela luscinia, Accentor modularis, Turdus iliacus, Turdus musicus, Turdus merula, Sturnus unicolor, Alauda cristata, Fringilla cœlebs, Passer domesticus, Gallinula chloropus,* and *Podiceps minor.*

On my return to Madrid I found that a man had brought to our hotel a Common Cuckoo, *Cuculus canorus,* alive for me: this bird was in the barred plumage of the first year, in fact precisely similar, to all appearance, to a nestling; but at this time of year it was impossible that this should be the case. Its owner insisted that it was no relation whatever to the Common Cuckoo. I do not remember to have ever before seen a bird of this species in this plumage at this time of year, and imagined that it assumed the grey adult plumage at the first moult; but I find that in Spain the country people all affirm that the *red* Cuckoos are to be seen at all times of the year between April and September, and consider them entirely distinct from the Common Cuckoo. This perhaps does not go for much; but I mention it as I had never before heard of the idea, and I should be glad to know whether any of my readers can throw any light on the subject.

On the next day, April 9th, I was again down early at the Casa de Campo, and, on this occasion, found that Manuel de la Torre had just returned. I made acquaintance with him, and found in him a man very much to my mind, well acquainted with all the birds of the country, evidently a keen observer, and full of information on local zoology. The chief facts I gathered from him were, that the Booted Eagle, *Aquila pennata,* about which I particularly inquired, does not arrive in Spain till the end of April, and that the Great Spotted Cuckoo, *Oxylophus glandarius,* was then due, and lays its eggs in the nests of the Common Magpie, *Pica caudata,* very soon after its appearance in country. We wandered about the southern boundary of the grounds of the Casa de Campo, where I had the pleasure of observing for a considerable time the actions of two pairs of the aforesaid Spotted Cuckoo. I had before had a passing glimpse of this bird in Murcia in 1856, and again in Andalucia in 1864; but I fancy, from subsequent observation, that it is much more common in Central than in Southern Spain. On the present occasion, my attention was at first attracted by a shrill chatter, quite unlike the note of any bird with which I was acquainted; and on approaching the spot whence it proceeded, I descried four long-tailed birds hopping about an open space some sixty yards from me, and occasionally flying up into the surrounding trees. As far as I could make out, they were engaged in catching and devouring grasshoppers, now and then diversifying this pursuit by a little love-making and a great deal of altercation. Their actions on the ground are very awkward and grotesque; but the flight is rather swift and well-sustained, somewhat resembling that of the Common Cuckoo. They were rather shy, and, on my showing myself, at once flew off into the high trees, where I heard them for a long time pluming one another, and keeping up an almost incessant chatter.

The following day I went down again to the Casa de Campo, and persuaded Manuel to accompany me with his gun. We again saw the Spotted Cuckoo, but he did not succeed in bagging one; he shot a Spanish Magpie, a Hoopoe, a Scops Owl, and two specimens of *Phyllopneuste bonellii* for me, besides which we saw, in addition to the species already enumerated, *Lanius rufus, Alcedo ispida, Turdus viscivorus,* and *Coccothraustes vulgaris.* In the Madrid market I observed Pintailed Sand-Grouse, *Pterocles setarius,* Woodcocks, *Scolopax rusticola,* Golden Plovers, *Charadrius pluvialis,* and Stone Curlews, *Œdicnemus crepitans.*

On my next visit to the Casa de Campo I noticed a pair of *Tinnunculus cenchris* and *Merops apiaster,* just arrived from their winter quarters. Manuel shot a Great Spotted Cuckoo and several other birds for me, including four fine specimens of *Anthus campestris,* which appears to be common in Castile during the summer months, and a specimen of *Potamodus cettii,* which is abundant, but, from its habit of frequenting the thickest brambles along the watercourses, and its extreme reluctance to take wing, very difficult to secure. The Common Cuckoo was in full song, and I heard many Wrynecks, *Jynx torquilla.* We obtained two eggs of *Oxylophus glandarius* from a nest of the Common Magpie, in a high oak, and these were the only eggs in the nest.

At length, on April 15th, I received the long-hoped-for permission to visit the *Sitios Reales* with a gun, and at the same time leave for Manuel to accompany me in my expedition. After one or two more visits to the Casa de Campo, on which occasions I added several Spotted Cuckoos, Spanish Magpies, and a few other species to my collection, we made an expedition to El Pardo, a crown-property at about seven miles from Madrid, consisting of a small village, a palace, and barracks, with an enclosed park some eighteen leagues in circumference. This park is in some places thickly wooded with ilex, cork, and the like, and is full of game of different kinds—deer, wild boars, rabbits, and partridges. In the winter, Woodcocks are said to be very abundant in the dense jungle of bramble, thorn, and tamarisk on the banks of the Manzanares, which, rising in the Sierra de Guadarrama, runs from north-west to south-east through the whole extent of this domain. Here we stayed for two days, but were prevented by continued rain from doing much. We spent hours in pursuit of *Potamodus cettii,* but only succeeded in securing two specimens of this provoking but charming warbler. The song somewhat resembles that of a Nightingale, but is louder and more thrilling, and generally ends abruptly just when one expects the best part of the performance to follow. We searched in vain for the nest of this species. Three or four Vultures were almost always in sight. Bee-eaters were arriving in myriads, and skimming over the country in every direction, high and low; and Spanish Magpies were shrieking and chattering from almost every clump of trees. We recognized a fine Golden Eagle, *Aquila chrysaëtus,* winging his way towards the mountains. Both species of Kite, *Milvus ictinus* and *M. migrans,* soared about the village on the look-out for an unwary chicken; and as evening came on, the cries of three species of Owl, *Strix flammea, Athene noctua,* and *Scops giu,* helped to make night hideous or beautiful, according to the fancy of the hearer. These three species are common, and the two former, I think, resident in all parts of Spain. *Bubo maximus* is not rare in the mountains, and *Asio otus, A. brachyotus,* and *Syrnium aluco* are well known, though I did not obtain specimens of any but the four first-named species. The Eagle-Owl is known as "*Buho grande;*" the Long-eared, Short-eared, and Tawny Owls indiscriminately as "*Carabo;*" the Barn-Owl is called "*Lechuza;*" the Little Owl "*Mochuelo;*" and the Scops "*Corneja.*" I was informed by Señor Graells that he has met with *Bubo ascalaphus* in the province of Catalonia.

We returned to Madrid on the 20th of April in pouring rain, which continued almost without intermission till the 24th, on which day I went down again to the Casa de Campo and shot several birds. The Warblers were arriving in great numbers, and we obtained specimens of *Sylvia orphea, Calamodyta arundinacea, C. phragmitis,* besides some Pied Flycatchers, *Muscicapa atricapilla,* a Tree-Pipit, *Anthus arboreus,* Scops Owls, Bee-eaters, Woodchats, *Lanius rufus,* and Spanish Magpies. On this occasion I first met with the Red-necked Nightjar, *Caprimulgus ruficollis,* but had not the luck to get a shot at him, as I had just killed a Warbler, and was struggling through the thick brambles to pick it up, when the Nightjar rose at my feet, and was out of sight before I could get my gun to my shoulder. The difference in size and the general lighter colour of the plumage at once distinguish this species from the Common Nightjar, *C. europæus,* which, as far as I have observed, is not very common in Spain. I was much struck by the enormous number of Swifts, *Cypselus apus,* which had arrived since my last visit to the Casa de Campo, and were now, with the Bee-eaters, by far the most prominent species about Madrid. The beautiful Lesser Kestrels, *Tinnunculus cenchris,* had also received strong reinforcements, and, with their congener *T. alaudarius,* now occupied every coigne of vantage in the town, particularly affecting the roof of the Queen's palace, where they appear to live amicably in company with great numbers of House-Pigeons and Starlings, *Sturnus unicolor.* Manuel informed me that a Peregrine Falcon generally took up its abode on the palace-roof in winter, and committed great havoc amongst the Pigeons. I found a specimen of this Falcon at the bird-stuffer's, Severini; but I am still of opinion that the common Falcon of the southern provinces is *Falco barbarus.*

We left Madrid for Aranjuez on the evening of the 24th April, by the Great Southern Railway, and took up our quarters at the Fonda de los Ynfantes, which hostelry I can safely recommend to any one visiting this summer retreat of Spanish royalty. On the following morning, after having paid a visit to the "Administrador," *i. e.* manager of the royal domain, for the purpose of obtaining his *visa* to my shooting-licence, we sallied out to commence our bird-nesting campaign. Aranjuez is a small village situated in the valley of the Tagus, near the confluence of the Jarama with that river, the country around it being, from the abundance of water and consequent fertility of its soil, the principal market-garden of the sun-scorched and wind-blown capital. Magnificent avenues of elm, plane, and oak extend along the roads in all directions; and the green meadows and groves of deciduous trees of the royal *patrimonio,* as it is termed, form a most agreeable contrast to the sombre olive-yards and the almost unvarying arid and tawny plains so characteristic of the central provinces of Spain; in fact the crown-property of Aranjuez may with justice be called an oasis in the desert; and though its sanitary reputation is not high during the summer months, it is the favoured abode of the Queen and Court, till the heats of July drive them to the pine-forests and snows of San Ildefonso. The *patrimonio* is of great extent, and is one of the most valuable of the many private estates of the Spanish crown. Of course, in such a thirsty country as Spain, we may take it for granted that where there is water there will be birds; and Manuel had given me glowing accounts of the great number and variety of birds of prey which breed here, and the abundance of wildfowl, Woodcocks, and Snipes to be met with during the winter in the *sotos,* or low-lying plains. We crossed the Tagus by a bridge just above the palace-gardens; and, stopping awhile to look at the camels which are used to carry gravel, weeds, and the like to and from the gardens, we strolled along under a glorious overarching avenue of planes and oaks on the Madrid road, and investigated many a likely-looking hole for nests, without success, as the Hoopoes, Green Woodpeckers, and Titmice, of which we saw great numbers, had not apparently yet begun to lay. Great numbers of the Spanish Sparrows, *Passer salicicolus*, were building in the plane trees; and Woodchats, Pied Flycatchers, Goldfinches, Serins, and Nightingales in profusion enlivened the roadsides. Not even in Epirus have I heard so many of this last species; and I was glad to hear that the "*Ruiseñor*," as the Spaniards call this delightful bird, is protected by special order of Her Catholic Majesty, who is repaid by a nightly serenade immediately under her palace-windows, such as not even the most skilled of her music-loving subjects can give her. We procured some more specimens of the little Scops Owl, and heard the fine clear note of the Golden Oriole, *Oriolus galbula* (in Spanish "*Oropéndola*"), which was then beginning to arrive in the country. A man at work in a field informed us that there was a nest of "*Milano*," *Milvus ictinus*, in a lofty stone-pine at some distance from the spot where we met him; and sure enough, on approaching the tree he pointed out, we could descry the nest and the tail of the Kite projecting therefrom. Manuel was anxious to secure the bird, as he received a reward of sixteen rials, between three and four shillings, for every *animal dañino* (noxious animal) which he brought in to the Administrador. We accordingly approached the tree, cautiously, from opposite directions, and I killed the bird as she slipped quietly off the nest on my side. The nest was nearly at the top of the tree, which shot up without a branch for at least seventy feet, and was far too bulky to admit of "swarming." Two urchins, who had watched our proceedings, declared that there was only one man in Aranjuez who could get to the nest, and that their father was that man. We accordingly despatched them to fetch him, and in the mean time shot many specimens of *Passer salicicolus*, of which bird great numbers were nesting in the thick branches of the pine over our heads, and some actually in the foundation of the Kite's nest itself. A bird, which I at once identified as a Short-toed Eagle, *Circaëtus gallicus*, sailed by, but out of shot, and the male Kite kept soaring in circles far above us. In a very short time the boys returned with their father, a fine specimen of the Castilian peasant, a tall, gaunt man of about fifty, simple-minded, and civil, as are the generality of his fellows. I mention him thus particularly, as I was so struck by his performance as a climber on this occasion that I retained him in that capacity during the remainder of my stay in Spain. He had come provided with a rope, one end of which, after a few ineffectual attempts, he managed to swing over the lowest bough of the tree in which the nest was, and in a few minutes was hauling himself up, hand over hand, after the fashion of a monkey. The nest contained two young birds, just hatched, and two rotten eggs. So much for our first day's nesting. On our way home we shot a fine pair of Little Spotted Woodpeckers, *Picus minor,* which I had not previously observed in Spain.

During the next few days we made excursions in different directions about Aranjuez, and obtained several more nests of *Milvus ictinus,* and added many species to my Spanish collection. On one occasion, Agapo, our climber, having ascended to a likely-looking hole in a white poplar, after hacking for some time with his bill-hook, declared that he could hear a sound inside which could only proceed from "*demonitos*" (little devils); and after some stirring up with a stick, out flew the imps of darkness in the shape of some twenty or thirty large red bats, of which we shot seven. We procured several nests of *Sturnus unicolor, Serinus hortulorum,* and other common birds.

On the 29th, at Sotomayor, on the Tagus, a few miles above Aranjuez, we found three nests of the Common Magpie, all containing eggs of the Spotted Cuckoo, which is extremely common in this locality. In one nest were eight eggs of the Magpie and three of the Cuckoo; in another, one Magpie's and three Cuckoo's; and in the third, two of each species. In almost every instance the eggs of the Cuckoo had been longer incubated than those of the Magpie. A perpetual skirmish goes on between these two species, the Magpies pursuing the Cuckoos with loud outcries, but condescending, nevertheless, to rear the young of the interloper to the detriment of their own families, as I was assured, and, from my own later observations, am inclined to believe, that the young Cuckoos forcibly eject the infant Magpies from the nest by force after the latter are hatched.

In a range of cliffs overlooking the plain of Sotomayor, Manuel had expected to find a nest of Bonelli's Eagle, *Aquila bonellii*; but although we several times saw this species in the neighbourhood, we could not ascertain that they had bred there this season, the nest that he had known of in previous years having been appropriated by a pair of Egyptian Vultures, *Neophron percnopterus.* In the plains below I found the Little Ringed Plover, *Ægialites minor,* in pairs, frequenting the mule-tracks, and apparently not caring about the shingle-beds and sand-banks of the Tagus close at hand, where I once or twice noticed the Kentish Plover, *Ægialites cantianus.* We shot our first specimen of the Red-necked Nightjar, *Caprimulgus ruficollis,* at the foot of the cliffs, and obtained several more specimens of *Potamodus cettii, Merops apiaster, Alauda cristata, Oxylophus glandarius,* and the like. Quails, *Coturnix communis,* were arriving in great numbers, and calling in every direction; and the clear notes of the Golden Oriole resounded from the oaks. In the valley Manuel shot a fine fox amongst the rocks, which he left as bait to attract Vultures. In many instances, we found that eggs and young of hole-breeding birds—Hoopoes, Woodpeckers, Starlings, and the like—had been devoured by the lizards (*Lacerta ocellata*), with which the country swarms, and in one case we disturbed a large lizard in the act of devouring the parent Hoopoe on her nest. The keepers assured me that these reptiles destroy an immense number of young rabbits, and will finish a whole sitting of Partridge's eggs at a meal. My dog, a Norfolk retriever, was completely puzzled by these lizards, and on being told to fetch one would sit on his haunches and whine, not knowing what line to take with the gaping, wriggling animal before him, so different to anything he had seen during the course of his orthodox British education.

On May 3rd we took upwards of twenty eggs of the Spotted Cuckoo from various Magpies' nests in the trees along the road leading to the Puente Largo, a bridge over the Jarama, some three miles from Aranjuez, in one case finding eight Cuckoo's eggs, with five of those of the rightful owner, in one nest. I shot on this day a beautiful specimen of *Sylvia conspicillata,* which frequents the low aromatic shrubs in the dry parts of the country, apparently preferring the districts in which there is a dense growth of thyme. In a marshy elbow of the river, overgrown with reeds, we flushed a Little Bittern, *Ardetta minuta*; but I did not get a shot, and I could not make him rise a second time. In the reeds the Thrush Warbler, *Acrocephalus arundinaceus,* was very abundant, and kept up an incessant chattering, very much like the conversation of a party of frogs, with occasional snatches of song resembling that of the Reed-Warbler, *Calamodyta arundinacea.* We saw a pair of Marsh-Harriers, *Circus æruginosus,* but did not succeed in finding their nest. Four species of Lark—*Alauda arvensis, A. cristata, A. brachydactyla,* and *A. calandra*—abound in this district; but I think that the Bee-eater maintained a numerical superiority over every other species. In a damp grove of poplars by the river I shot five beautiful specimens of the Red-necked Nightjar, but could not succeed in finding the eggs. I imagine they had only just arrived. On the hills near Aranjuez we procured three species of Wheatear—*Saxicola cachinnans, S. stapazina,* and *S. aurita*; the second is by far the most common of the three.

Having heard of a Kite's nest in the Queen's gardens, on May 1st we went to look for it, and found it in the top of a magnificent elm close to the palace. Manuel shot the bird, which turned out to be a fine specimen of the Black Kite, *Milvus migrans,* the first we had procured. Before sending our climber up, we went on to examine another nest, of which we had been told, in a high plane tree in another part of the gardens. After some trouble we found it, and shouted in vain for some time to make the bird leave it. Up went the trusty Agapo; but the bird sat close till he was within a yard or two of the nest, when she dashed off, plainly disclosing to us the fact that she was not a Kite. Manuel was badly placed for a shot, and, though he fired, did not succeed in killing her. On reaching the nest, Agapo declared that the two eggs which it contained were white and unspotted. Manuel shouted to him to know if the boughs in the interior of the nest had green leaves on them, and, on his replying in the affirmative, declared that it was a nest of the Booted Eagle, *Aquila pennata.* Agapo brought down the eggs, which were certainly unlike those of any Kite that I had ever seen. Manuel assured me that he had no doubt whatever as to their being the eggs of *A. pennata*; but to make sure, we waited quietly for the return of the parent bird. She did not keep us long in suspense; but, after soaring far out of shot for some minutes, enabling us fully to identify her species, she dropped perpendicularly on to her empty nest, rendering it impossible to obtain a shot. The nest indeed was quite as far as Manuel's gun would carry; and though on the Eagle leaving it a second time he fired and declared that she was a dead bird, I must confess that I believe, for all the harm he did to her, she may be, whilst I write, preparing for another attempt at establishing her family in New Castile. The Black Kite's nest contained three eggs, and in its foundations were three nests of the Spanish Sparrow. I may here mention that in almost every nest of the two species of Kite, *Milvus ictinus* and *M. migrans,* which we found in Spain, were one or more nests of this Sparrow, besides, in most instances, a large colony in the immediate vicinity. We found several nests of the Serin, *Serinus hortulanus,* in the clipped hedges, the odoriferous establishment of a Hoopoe in a hollow elm, and nests of the Common Wren, *Troglodytes parvulus,* Blackbird, and Nightingale in various parts of the garden. Whilst sitting with some of the gardeners discussing our exploits over a cigarette, a very large flock of Bonelli's Eagle passed over to the southwards high in air; there was no possibility of mistaking the species, the very peculiar shape of the tail, which I have before noticed*, and the tawny-red breasts of the immature birds at once serving to distinguish them. Manuel told me that he had several times previously seen large flights of this species high in air as if on migration; but as this Eagle is well known as a permanent resident in Spain, it is difficult to account for these large assemblages, more particularly at this season of the year. With one exception, I never before saw such a congregation of raptorial birds, and should be glad to know if such an occurrence has come under the observation of any of my readers.

On the following day we went out to a small lake on the road to Ocaña, known as El Mar de Aranjuez. In the tamarisk-thickets at one end of the lake we found great numbers of the Melodious Willow-Warbler, *Hypolais salicaria*, of which species we obtained many specimens; we also shot a Little Bittern, and saw many White- and Grey-headed Wagtails, *Motacilla alba* and *Budytes flava*, Sandpipers, *Actitis hypoleuca*, and several pairs of Eared Grebes, *Podiceps nigricollis*. Of this last species we obtained two nests with their full complement of eggs, but we did not succeed in shooting one of the parent birds. A few Wild Ducks, *Anas boschas*, were breeding in the rushes at the lower end of the pool; and in a range of low cliffs at a short distance we descried several nests of the Common Kestrel, and one of the Raven, *Corvus corax*; but we had no ropes with us, and without them a siege was impossible. The Raven is very common throughout Spain: in a nest of this bird which we took was one egg of *Oxylophus glandarius*, with five of the proprietor's. This nest was in a high pine tree about a mile from Aranjuez. In the afternoon of the day above mentioned, I rode out to a spot on the other side of the village to which the carcasses of the horses which die in the royal *haras* are dragged and left to rot in the sun; here we found a great concourse of carrion-eating birds, consisting of perhaps some twenty or more of the Cinereous Vulture, *Vultur monachus*, a pair or two of Griffons, *Gyps fulvus*, a sprinkling of Egyptian Vultures, many Kites of both species, and a great number of Ravens. I made a long detour to attempt stalking one of the first-named birds, which I was anxious to obtain, but in vain; the ground would not admit of concealment, and the Ravens acting as sentries effectually prevented my success. I here observed, amongst many tracks of cats, foxes, badgers, polecats, and other predatory animals, the footprints of the Genet (*Viverra genetta*), which is tolerably abundant in Central and Southern Spain.

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* Ibis, 1860, p. 5.

Here I must leave off for the present, hoping to have another opportunity of recording my further doings in Spanish ornithology, and expressing my wish that some far more competent naturalist than myself may go out and prosper in Spain. Would that I could accompany him!

March 1866.

[To be continued.]

XVIII.—*A further Contribution to the Ornithology of Guatemala.* By Osbert Salvin, M.A., F.L.S, &c.

As a number of species of Birds were obtained by Mr. Godman and myself during our visit to Guatemala which are not included in the papers on the ornithology of that country, published by Mr. Sclater and myself in the earlier volumes of this Journal, I now propose to give a list of these additions; and at the same time I take the opportunity of bringing into the same uniform plan all the species incidentally mentioned by me in other papers referring to the ornithology of Guatemala (Ibis, 1864, p. 372, and 1865, p. 187). I also append a series of corrections to former lists, both of nomenclature and distribution, which further observations have brought to light.

I am now acquainted with 612 species of birds that inhabit the country included within the limits prescribed in our first paper. Of these, all but about 21 have come under our personal notice, either from our own observations or from having been procured for us by collectors sent to obtain specimens from particular localities. Our own observations have extended over the greater portion of the country. A small collection was made at Belize, and on each occasion at Yzabal, twice by myself alone, and twice in company with Mr. Godman. I have traversed the road to Guatemala four times, and each time collected a few specimens. I by myself, as well as with Mr. Godman, made considerable collections at Dueñas in the uplands of Guatemala, where very large additions were amassed for us by Mr. Wyld and his family while we were away in other parts. These include a large number from the Volcan de Fuego and the upper section of the Pacific coast-region, both of which are easily reached from Dueñas. We both, on separate occasions, collected at Escuintla. After Mr. Godman left, I passed through the Altos, starting from Vera Paz, staying at Totonicapam, Quezaltenango, and other places, and also made two expeditions to the Costa Grande, staying, during the first, at Retaluleu. The second I devoted to the lagoons of the coast, and the series of small lakes at Huamuchal, close to the frontiers of Soconusco. I also obtained a few specimens from San José, the Pacific roadstead of Guatemala, and also further to the southward, from the road to the mines of Alotepeque and the ruins of Copan.

In Vera Paz, during my second visit to Guatemala, through the cordial help of Mr. Robert Owen, I obtained a collection from San Gerónimo, and also another during two visits to Coban. With Mr. Godman I explored some of the mountains of Santa Cruz, especially the neighbourhood of Chilasco, and again visited Coban. We then descended to the lowlands of Choctum, and I afterwards went by way of Cahabon to Peten, and thence, descending the Belize river, visited the Cays of the Belize coast, returning to Guatemala by way of Yzabal. Both of us also, on separate occasions, passed down the Polochic river into the lake of Yzabal. So much for our own explorations. I have mentioned the great help rendered by Mr. Wyld and his family, who, by employing Indian hunters of Dueñas, obtained for us some very valuable additions. Mr. R. Owen also, and Mr. Hague of San Gerónimo, aided us very materially in Vera Paz. From Don Vicente Constancia we procured a considerable number of skins, partly collected in the vicinity of the Antigua, and partly from Vera Paz. Don Carlos Meany, of Guatemala, also furnished us with a few specimens. The greater part of our collections from Choctum and the *tierra caliente* north of Coban, in Vera Paz, were formed by Cipriano Prado, an excellent collector, who, with the aid of Indian shooters, thoroughly exhausted that district of novelty. His brother, Juan Prado, also made a good collection, chiefly of Raptores, in Coban; and Felipe Sierra, also an energetic collector, furnished a good contribution from the valley of the Polochic. Collections were also obtained from Cahabon and Tactic. On the Pacific coast, Enrique Arcé, who is now so successfully exploring Veragua and Costa Rica, made a collection in the vicinity of Retaluleu and Champerico. A few additional species were also most kindly given me by Dr. Bernouli of Masatenango, who had formed a small collection. These, with some occasional specimens obtained from various quarters, comprise the principal sources from which our collection has been amassed.

The parts least explored, and which therefore present the greatest chance of additional discoveries, are the Altos north of

Quezaltenango (where *Parus, Sitta,* and other Mexican highland forms are yet to be found), Yucatan (where I feel sure much remains to be done, especially amongst the savannas of that peculiar district), and southward along our southern boundary, which, it will be remembered, was the line of the proposed Honduras Railway. This line I now believe to be perfectly arbitrary, as I have little doubt that the Guatemalan fauna really extends as far south as the Rio San Juan and the southern border of the lake of Nicaragua. Passing south of this, we come at once upon the clearly defined and peculiar fauna of Costa Rica. But more on this subject on another occasion, as space will not allow me now to enter critically upon the distribution of ornithic life throughout the isthmus.

1. Catharus frantzii (Cab.): Baird, Rev. Am. Birds, part i. p. 9.

In November 1861 we obtained a single specimen of this species at Dueñas. It agrees with other specimens in our collection from Costa Rica, where it was first discovered by Dr. von Frantzius.

2. Cinclus mexicanus, Sw.?

A pair of Dippers once only came under my notice. They were seen on the rocks of a mountain-torrent above Totonicapam, at an elevation of about 10,000 feet above the sea. I shot one, but the stream swept it away before I could reach it.

3. Psaltriparus melanotis, Hartl.

Originally described from Guatemalan specimens. On more than one occasion I observed what I believe to be this species, in the pine-woods of the mountains near Solola and above the lake of Atitlan.

4. Polioptila superciliaris, Lawr.

A single male specimen of this *Polioptila* was brought to us from Chisec.

5. Certhia mexicana, Gloger: Baird, Rev. Am. Birds, part i. p. 90.

The Mexican Tree-creeper is by no means uncommon in the pine-forests of the upper zone of the Volcan de Fuego. We also observed it frequenting pine trees in the district of Chilasco, Vera Paz, at about 6000 feet above the sea.

6. Campylorhynchus rufinucha, Lafr.: Baird, Rev. Am. Birds, part i. p. 105.

Prof. Baird (*l. c.*) has pointed out differences between this species and *C. capistratus* of Lesson, which specimens in our collection, in a measure, confirm. Specimens from the Pacific side of the watershed agree with *C. capistratus*, while a single specimen from the valley of the Motagua (Chuacus) differs from these as regards the coloration of the upper plumage; the tail also is rather longer, in both these respects agreeing with Prof. Baird's description of *C. rufinucha*. The tarsi, however, are equal in all our specimens, and the quadrate spots on the outer rectrices (except the outermost) are absent. As the areas inhabited by these very closely allied species are distinct, in Guatemala at least, I prefer to leave them as Prof. Baird has placed them.

7. Thryothorus albinucha (Cabot): *T. petenicus*, Salv. P. Z. S. 1863, p. 187; Baird, Rev. Am. Birds, part i. pp. 125, 149.

Prof. Baird has kindly compared our type specimen of *T. petenicus* with that of *Troglodytes albinucha*, Cabot; and the result of his observations will be found as above quoted. There seems little doubt that the species are identical. Our specimen was shot near the village of Sakluk, in the district of Peten.

8. Dendrœca occidentalis (Towns.): *D. niveiventris*, Salv. P. Z. S. 1863, p. 187, pl. 24. fig. 2. *D. occidentalis*, Scl. Ibis, 1865, p. 89.

The error I fell into in redescribing this bird has been fully explained in the last mentioned paper by Mr. Sclater, who also had some sins to account for. The bird occurs in most of the elevated districts where pines abound. We obtained specimens in the Volcan de Fuego, in the hills above the plain of Salama, and near the mines of Alotepeque.

9. Dendrœca olivacea (Giraud): Baird, Rev. Am. Birds, part i. p. 205.

Prof. Baird, in his 'Review,' mentions a specimen received from us as marked "Choctum, Vera Paz, Jan. 1862." This is certainly an error as regards locality, as we never obtained this species except in the higher districts. It is common in the upper pine-forests of the Volcan de Fuego, and also in the district of Chilasco in Vera Paz.

10. DENDRŒCA VIEILLOTI, Cassin: Baird, Rev. Am. Birds, part i. p. 203.

Occurs on the Cays of the Belize coast. (See Ibis 1864, p. 280.) We also possess specimens from Costa Rica.

11. BASILEUTERUS RUFIFRONS, Sw.

A single specimen from Dueñas having the lower belly whitish, and not yellow as is the case with all our specimens of *B. delattrii*, Bp. I place it under the above name.

12. CARDELLINA VERSICOLOR, Salv. P. Z. S. 1863, p. 188, pl. 24. fig. 1.

This beautiful species is only found in the highest districts, such as the Volcan de Fuego, Totonicapam, and Chilasco.

13. CARDELLINA RUBRIFRONS (Giraud): Baird, Rev. Am. Birds, part i. p. 264.

Volcan de Fuego and Totonicapam.

14. PETROCHELIDON ALBILINEA, Lawr.: *P. littorea*, Salv. P. Z. S. 1863, p. 189; Baird, Rev. Am. Birds, part i. p. 300.

A common species on both Atlantic and Pacific coasts of Guatemala, and southward to Panama. It is also to be seen frequenting rivers, though never ascending into the interior.

15. PETROCHELIDON SWAINSONI, Scl.: Baird, Rev. Am. Birds, part i. p. 290.

Dueñas.

16. COTYLE RIPARIA (Linn.): Baird, Rev. Am. Birds, part i. p. 319.

We obtained several specimens of this species at Dueñas in September 1861, having previously observed it about the lake of Yzabal.

17. Vireo ochraceus, Salv. P. Z. S. 1863, p. 188.

San José de Guatemala, on the Pacific coast.

18. Vireo semiflavus, Salv. P. Z. S. 1863, p. 188.

Peten.

19. Vireo pallens, Salv. P. Z. S. 1863, p. 188.

From the harbour of Realejo. The types of these three species have been examined by Prof. Baird, and will be mentioned in a monograph of the genus shortly to appear.

20. Rhamphocelus uropygialis, Bp. : Scl. Cat. p. 79.

Is said to come from Guatemala. We never met with it.

21. Cardinalis virginianus (L.)?

I saw Cardinal-Grosbeaks at Belize, but did not obtain specimens.

22. Phonipara pusilla, Sw.

Peten. It is also found as far south as Panama.

23. Spizella pinetorum, Salv. P. Z. S. 1863, p. 189.

From the open savannas, called pine-ridges, of Poctum, in the southern border of the district of Peten. I found several birds feeding together amongst the grass.

24. Junco alticola, Salv. P. Z. S. 1863, p. 189.

Common in the upper zones of the volcanoes of Agua and Fuego, as well as in the Altos of Guatemala, at an altitude of about 8000 feet. Quezaltenango, Totonicapam.

25. Ammodromus petenicus, Salv. P. Z. S. 1863, p. 189.

Obtained in the open savannas of the district of Peten.

26. Pipilo oregonus, Bell.

A common species in the Altos, frequenting brushwood. Quezaltenango, Solola, Chimaltenango, &c.

27. Loxia mexicana (Strickl.)?

On descending the *cuesta* of Chuacus, in September 1861, we both watched several Crossbills for some time, and I have little doubt they were of this species; but our guns being with the servants, we failed to secure specimens, as they were gone before our men joined us.

28. CHRYSOMITRIS ATRICEPS, Salv. P. Z. S. 1863, p. 190.

Quezaltenango. Found feeding on thistles.

29. SYCALIS CHRYSOPS, Sclater, P.Z. S. 1861, p. 376.

One immature specimen only, found with another feeding on some seeds near the border of the lake of Dueñas.

30. QUISCALUS MAJOR, Vieillot.

The Crow Blackbirds frequenting the Cays of the Belize coast seem to belong to this species rather than to *Q. macrurus*, Sw., which is the common bird of the interior of Guatemala.

31. DOLICHONYX ORYZIVORA (Linn.).

I only met with this widely spread species in a single locality, one of the Cays of Lighthouse Reef on the Belize coast.

32. CYANOCITTA UNICOLOR, DuBus: Scl. Cat. p. 143.

This fine Jay is common in the district of Chilasco in Vera Paz, and also in the fir-forests above Totonicapam and Quiché. They are usually met with in small flocks of five or six. This species has hitherto only been recorded from Mexico.

33. ELAINEA, sp.

We possess a single specimen of an *Elainea* obtained near Dueñas, which agrees very nearly with an undescribed species in Mr. Sclater's collection.

34. ONCOSTOMA CINEREIGULARE, Scl.

A common species at Coban, and accidentally omitted from former lists.

35. TROGON AURANTIIVENTRIS, Gould.

One of our collectors obtained a single female specimen of this Trogon near Choctum, in the low forest-region of Vera Paz.

36. TROGON ELEGANS, Gould.

Though we never met with this species, it must be included. being mentioned as coming from Guatemala by both Gould and Cabanis (*Mus. Hein.*). We possess specimens both from Mexico and Nicaragua.

37. NYCTIBIUS JAMAICENSIS (Gm.).

Though never actually observed by either of us, this species, no doubt, is found in the country, as Don Vicente Constancia obtained two specimens, one of which is now in our possession, near the city of Guatemala.

38. Antrostomus carolinensis (Gm.).

One female specimen only was obtained at Dueñas.

39. Panyptila sancti-hieronymi, Salv. P. Z. S. 1863, p. 190, pl. 23.

No additional specimens have been received by us since the two mentioned above were obtained, though I have made every endeavour to procure more. Unless a rock to which the species resorts to roost were found, it is not likely that any birds will be shot, as their rapidity of flight is greater than that of any Swift I ever saw.

40. Pyrrhophæna cerviniventris, Gould, Mon. Troch. v. pl. 309.

I obtained three specimens of this species near the village of Santana, Peten. They were feeding in company with the common species, *P. riefferi* (Bourc.), and *Lampornis prevosti* Bourc. et Muls.

41. Pyrrhophæna cyanura, Gould, Mon. Troch. v. pl. 315.

Originally described from specimens procured near Realejo, Nicaragua. I found it tolerably numerous near the villages of Retaluleu and Masatenango, in the district of Guatemala called the "Costa grande." It would appear to be restricted in its range to the Pacific side of the Cordillera.

42. Chrysotis levaillanti, Gray.

Belize and Yucatan.

43. Scops, sp.

We have at least one Owl of this form to be added to the list of Guatemala birds; but, as the whole group must shortly undergo revision, I leave its determination for the present.

44. Ciccaba nigrolineata, Scl. Trans. Z. S. vol. iv. p. 269, pl. 63.

Two fine specimens of this Owl were given me by Dr. Bernouli. They were shot near Masatenango, in the Costa Grande of the Pacific side.

45. **Brachyotus cassini**, Brewer.

A few days before leaving Guatemala, some Indians brought two specimens of the American Short-eared Owl. They said they had shot them amongst some long grass (*pajal*) on the slope of the Volcan de Agua.

46. **Mycteria americana** (Linn.).

I believe this magnificent Stork occurs nowhere but in the neighbourhood of the half-dry, brackish lakes of Huamuchal. It is not common, and is only occasionally met with. I obtained but two specimens (*vide* Ibis, 1865, p. 197).

47. **Demiegretta ludoviciana** (Wils.): Baird, Birds N. A. p. 663; Salv. Ibis, 1865, p. 192.

Louisiana Herons are common about the lagoons that line the whole Pacific coast of Guatemala. I never observed the species far inland.

48. **Demiegretta pealii** (Bp.): Baird, Birds N. A. p. 661; Salv. Ibis, 1865, p. 192.

This species is generally, but not commonly, met with on the muddy flats surrounding the salt pools of Chiapam.

49. **Demiegretta rufa** (Bodd.): Baird, Birds N. A. p. 662.

This Heron is found in the same localities as the preceding species, but is certainly more abundant.

50. **Botaurus lentiginosus** (Mont.)

Dueñas and Coban.

51. **Ardetta exilis** (Gm.).

Dueñas and Coban.

52. **Squatarola helvetica** (Linn.): Baird, Birds N. A. p. 697; Salv., Ibis, 1865, p. 190.

This almost universally distributed species occurs on the sandy flats of Chiapam, and is usually seen in company with the flocks of *Tringæ*, and the like.

53. **Ægialites nivosus**, Cassin?: Baird, Birds N. A. p. 696.

We possess a single specimen of a Ring-Plover collected by

Arcé at Chiapam in September 1862, which agrees fairly well with Mr. Cassin's description of *Æ. nivosus,* as quoted above. It has, however, a narrow black pectoral band, which he conjectures is present in the adult of his species, and is, as far as I can judge from the skin, somewhat smaller in its measurements, except the wings, which are slightly, and the tail, which is much longer. I feel doubtful if it really does belong to this species, as our specimen differs very little from the South American *Æ. collaris,* Vieill. (*Æ. azaræ,* auct.), and certainly does not confirm Mr. Cassin's remark respecting the distinction of the *Æ. nivosus* from *Æ. collaris* :—"It is quite distinct from that [i. e. *Æ. azaræ*] or any other that has come under my notice." Our specimen differs from the South American bird in the absence of the rufous on the sides of the neck and above and below the ends of the pectoral band; for this reason I place it under the name of *Æ. nivosus.* Its measurements are precisely those of *Æ. collaris,* of which I possess two specimens—one from Mendoza, through Prof. Burmeister, and the other from Marambaya in Brazil, collected by Natterer. Long. tot. 6, alæ 3·85, caudæ 2, tarsi 1·05, rostri à rictu ·75 poll. Britt.

54. ÆGIALITES SEMIPALMATUS (Bp.): Baird, Birds N. A. p. 694; Salv. Ibis, 1865, p. 191.

Sandy flats of Chiapam.

55. ÆGIALITES WILSONIANUS (Ord): Baird, Birds N. A. p. 693; Salv. Ibis, 1864, p. 387, et 1865, p. 191.

Found in flocks with the last-mentioned species. Very common. It occurs also and remains to breed on the Cays of the Belize coast.

56. NUMENIUS HUDSONICUS, Lath.: Baird, Birds of N. A. p. 744; Salv. Ibis, 1865, p. 190.

Very abundant about the lagoons of Chiapam.

57. NUMENIUS LONGIROSTRIS, Wils.: Baird, Birds of N. A. p. 743.

Not nearly so common as the last species, but found in the same localities. We also have a specimen which was shot near Dueñas.

58. SYMPHEMIA SEMIPALMATA (Gm.).

Common at Chiapam and the lagoons of the Pacific coast.

59. PHALAROPUS WILSONI (Sab.).

From a lake near Guatemala (*Constancia*).

60. RECURVIROSTRA AMERICANA, Gm.: Baird, Birds N. A. p. 703. *R. occidentalis*, Vigors, Zool. Journ. 1829, p. 356; Salv. Ibis, 1865, p. 193.

All the Avocetts I saw were in the plumage described by Vigors as *R. occidentalis*. They are common at Chiapam and about the neighbouring lagoons.

61. STREPSILAS INTERPRES (Linn.): Baird, Birds of N. A. p. 701.

Occurs on both coasts of Guatemala.

62. ORTYGOMETRA JAMAICENSIS (Gmel.).

A single specimen, agreeing in all respects with examples from Jamaica, was shot by Mr. Fraser near the lake of Dueñas.

63. GALLINULA GALEATA (Licht.).

Lake of Dueñas: not common.

64. ÆTHYIA VALISNERIA (Wils.): Baird, Birds of N. A. p. 794.

We obtained a single immature male of this species from the lake of Dueñas.

65. LARUS HEERMANNI, Cass.: Baird, Birds N. A. p. 848; Coues, Ibis, 1864, p. 388; Salv. Ibis, 1865, p. 190.

Young immature birds only were obtained on the Pacific coast. They were usually found along the shore, and not in the lagoons.

66. CHROICOCEPHALUS CUCULLATUS, Licht.: Baird, Birds N. A. p. 851; Coues, Ibis, 1864, p. 388.

Usually observed a short way out at sea on the Pacific coast.

67. THALASSEUS ACUFLAVIDUS, Cabot: Coues, Ibis, 1864, p. 389; Salv. *ibid.* pp. 381 & 386, et 1865, p. 190.

A very common species on both coasts.

68. THALASSEUS ELEGANS, Gambel: Coues, Ibis, 1864, p. 389.

The only specimen of this bird which came under our notice was shot in the Bay of Fonseca by Capt. J. M. Dow, who kindly presented it to me.

69. Thalasseus regius, Gambel: Baird, Birds N. A. p. 859; Coues, Ibis, 1864, p. 388; Salv. *ibid.* p. 385, et 1865, p. 190.

Also abundant on both coasts.

70. Gelochelidon anglica (Mont.): Coues, Ibis, 1864, p. 389, et 1865, p. 190.

Common at Chiapam.

71. Sterna paradisea, Brünn.: Coues, Ibis, 1864, p. 389; Salv. *ibid.* p. 387.

I observed only three or four of this species on Grassy Cay, Turneff. They were, I believe, preparing to breed on that island, which was also tenanted by great numbers of *S. antillarum.*

72. Sterna forsteri, Nutt.: Coues, Ibis, 1864, p. 390.

The only Tern I ever saw on the lake of Dueñas.

73. Sterna antillarum, Less.: Salv. Ibis, 1864, pp. 384 & 387; Coues, Ibis, 1864, p. 390.

Mr. E. Bartlett has lately sent home a specimen of a *Sterna,* which I have no doubt is the *S. superciliaris,* Vieill. The differences between this bird and *S. antillarum* are ably stated by Dr. Coues as above quoted, and apply equally to the Bogotan specimen he had before him and to Mr. Bartlett's from the Upper Amazons.

74. Haliplana panayensis (Gm.): Salvin, Ibis, 1864, pp. 381 & 385. *Sterna panaya,* Lath. Ind. Orn. ii. p. 808. *Haliplana discolor,* Coues, Ibis, 1864, p. 392; Lawr. Ann. Lyc. N. Y. viii. p. 105.

I cannot agree with Mr. Lawrence in justifying Dr. Coues's redescription of this bird under a new specific name. Gmelin's remark, "*cervix ex cinerascenti nigra,*" I think at once shows that the bird he was describing certainly was not *H. fuliginosa,* with which both he and Latham were well acquainted. This character is, on the contrary, applicable to the present species, and is also noticed by Latham (Gen. Hist. vol. x. p. 119), where he says, "hind part of the neck greyish black." The top of the head is described as being spotted with black, indicating immaturity. A specimen before me has a single white feather on the crown. Such being the case, I cannot avoid concluding that the description of *Sterna panayensis* fits this well-known species better than its congener, and that the name now under discussion had best be left as most modern ornithologists have identified it.

The species is common about the Cays of the Belize coast.

75. Haliplana fuliginosa (Gm.): Salv. Ibis, 1864, p. 385.

I only met with a few solitary birds of this species about the Cays of the Belize coast. It is said to be much more abundant and to breed in large numbers at Cape Gracias a Dios.

76. Anous tenuirostris, Temm.: Salv. Ibis, 1864, p. 383; Coues, *ibid.* p. 393.

Abundant on one small Cay (South-West of All Cay) on the outer margin of Glover's Reef.

77. Rhynchops nigra, L.: Salv. Ibis, 1865, p. 193.

Lagoon of Acapam, on the Pacific coast.

78. Phalacrocorax floridanus, Aud.: Salv., Ibis, 1864, p. 374.

Man-of-War Cay, Belize coast. We possess one other species of *Phalacrocorax* besides *P. mexicanus*, which we have not yet been able to identify, as the specimens are immature.

79. Sula piscator (L.): Salv. Ibis, 1864, p. 379.

Half-moon Cay on the Belize coast, where numbers resort to breed.

80. Podiceps californicus, Heerm.

Common on the lake of Dueñas, in immature and winter plumage. One specimen in summer dress was shot near Cubulco, in Vera Paz, and brought to us.

81. Podilymbus, sp.

A second species of this form occurs on the lake of Atitlan. I have not yet determined it.

Corrections to the former Papers on the Ornithology of Central America.

In our introductory remarks (Ibis, 1859, p. 4) we somewhat prematurely stated that the part of Central America of which we were speaking embraced three distinct regions—the Atlantic coast-region, the Central region or tablelands, and the Pacific coast-region, and that the two coast-faunas were quite distinct, the same species seldom occurring in both. In order to show how this view must be modified, and in a great measure altered, I will briefly state how the 612 birds are distributed, and how much peculiarity is possessed by each division. As the central country is deeply cut by valleys—those of the Motagua and some of the southern branches of the Rio Chisoy or Negro, such as the river of San Gerónimo—all of which open out into plains of considerable extent, viz. those of Zacapa (1200 feet above the sea), Salama (3000 feet), Rabinal, Cubulco, and so on, the vegetation of which consists of open grassy savannas broken by patches of *Mimosæ* and *Cacti*, I shall begin by considering this a separate district, and also the highland (peninsula of cold country I may call it) district of Alta Vera Paz. 189 species were observed in the Pacific coast-region, 280 in the tablelands of the Cordillera, *i. e.* at 4000 feet of elevation and upwards, 132 in the central plains and valleys, 214 in Alta Vera Paz, and 309 in the Atlantic coast-region. 31 of the Pacific coast-region birds were observed only there; the number of species peculiar to each of the other districts were observed to be 63 in the tablelands, 11 in the central plains, 26 in Alta Vera Paz, and 149 in the Atlantic coast-region. Most of the remaining species of the Pacific coast-region belong also to that of the Atlantic, and only a few to the tablelands. The tablelands and Alta Vera Paz have more species in common than either has with any lowland region, and the central plains and valleys belong rather to the *terra caliente* than to the upland districts.

After deducting from the number of species apparently peculiar to each region such as are really of much wider range, we find but little, except perhaps poverty of species, to separate the Pacific coast-region and the central plains and valleys from the

Atlantic coast-region; and in the same way, though hardly to the same extent, Alta Vera Paz merges into the highlands of the Cordillera. Hence we see that altitude and consequent decrease of temperature is the primary cause for separating the ornithic life of Guatemala into two principal divisions. The minor divisions are chiefly the result of different causes, and depend on vegetation and consequent abundance or scarcity of food. Again referring to the Pacific coast-region, it is worthy of remark that only two or three peculiar species are found representing other closely allied species on the Atlantic side, and that the difference is most strongly shown by the absence of many genera common in the corresponding eastern region. To show clearly how these results have been arrived at, it would be necessary to compare the numbers in some tabular form; but as this would enlarge the subject beyond my present intention, which is simply to correct errors, I leave it for another opportunity.

1859, p. 5. *Turdus grayii*, Bp. Not confined to districts of upwards of 4000 feet of elevation, but found throughout the lowlands and as far southward as Panama.

„ p. 7. *Mimus gracilis*, Cab. Very rare on the tablelands, and, as far as I am aware, never occurs on the Pacific side.

„ p. 8. *Campylorhynchus capistratus*, nobis nec Less. Belize specimens probably belong to *C. rufinucha* (*vide suprà*). The true *C. capistratus* is common on the Pacific side.

„ p. 9. *Troglodytes aedon*, nobis (nec Vieill.) = *T. intermedius*, Cab., *T. hypaedon*, Scl.

„ p. 9. *Polioptila mexicana* (Bp.). Now considered by Dr. Baird to be identical with the northern *P. cærulea* (L.). (See Rev. Am. B. part i. p. 74.)

„ p. 12. *Icteria velasquezi*, Bp. Now considered the same as *I. virens*, L. (See Baird, Rev. Am. B. part i. p. 228.)

„ p. 12. *Vireosylvia philadelphica*, nobis (nec Cassin) = *V. cobanensis*, Scl. P. Z. S. 1860, p. 463.

1859, p. 13. *Progne dominicensis,* nobis (nec Gm.) = *P. leucogastra,* Baird, Rev. Am. B. part i. p. 280.

The males, as far as my observations go, never have the glossy steel-blue of the back on the throat and chest, thus differing from the true *P. dominicensis* of the Antilles.

„ p. 14. *Chlorophanes atricapilla,* nobis, ? = *C. guatemalensis,* Scl. The difference is very slight.

„ p. 19. *Sturnella hippocrepis,* Wagl. (?)

I agree with Cabanis in uniting all the numerous species of *Sturnella* of this form under the old name of *S. ludoviciana.* I am quite at a loss to detect the characters by which they are said to be distinguishable.

„ p. 20. *Icterus affinis,* Lawr. = *I. spurius,* L.

„ p. 119. *Thamnophilus melanurus,* nobis (nec Gould) = *T. melanocrissus,* Scl. P. Z. S. 1860, p. 252.

„ p. 122. *Contopus borealis,* nobis (nec Sw.) = *C. pertinax,* Cab. et Hein.: Scl. Cat. p. 231.

„ p. 122. *Contopus mesoleucus,* Scl. = *Tyrannus borealis,* Sw. : Scl. Cat. p. 230.

„ p. 122. *Contopus sordidulus,* Scl. = *Tyrannula richardsoni,* Sw. F. B.-Am. : Scl. Cat. p. 231.

„ p. 124. *Lipaugus rufescens,* Scl. Probably from Panama. We never met with the species in Guatemala. At Panama it does occur.

„ p. 124. *Chiroxiphia linearis* (Bp.). Never from Vera Paz; the species is peculiar to the Pacific coast-region. The supposed specimens from Vera Paz came through Don Vicente Constancia, whose information respecting localities I have sometimes found incorrect.

„ p. 125. *Nyctidromus americanus* (Linn.) ? = *N. guianensis,* Gm. Probably the only species of the form. The true *Caprimulgus americanus,* L., founded on *C. jamaicensis,* Briss., is the *Siphonorhis americanus,* Scl. (see Cat. Am. Birds, p. 282).

1859, p. 126. *Phaethornis cephalus,* (Bourc. et Muls.) = *P. longirostris* (Delatt.), Gould, Introd. Troch. p. 42.

„ p. 127. *Campylopterus delattrii* (Less.) = *Trochilus hemileucurus,* Licht.: Gould, Introd. Troch. p. 52.

„ p. 127. *Cyanomyia cyanocephala,* nobis (nec Less.) = *C. guatemalensis,* Gould, Introd. Troch. p. 148.

„ p. 130. *Amazillia corallirostris* (Bourc. et Muls.) = *Ornismya cinnamomea,* Less.: *Pyrrhophæna cinnamomea,* Gould, Introd. Troch. p. 156.

„ p. 130. *Amazillia arsinoe,* nobis (nec Less.) = *Troch. devillii,* Bourc.: *Pyrrhophæna devillii,* Gould, Introd. Troch. p. 158.

„ p. 130. *Chlorostilbon caniveti* (Less.). = *Chlorolampis osberti,* Gould, Introd. Troch. p. 174.

„ p. 131. *Ceryle americana,* nobis (nec Gm.) = *C. cabanisi,* Tsch.: Scl. Cat. p. 264.

„ p. 132. *Trogon citreolus,* Gould. Specimens of this Trogon, which we never met with ourselves, are in the Berlin Museum. They were collected by Deppe at Tequistlan and Tehuantepeque (Cab. Mus. Hein. iv. p. 198).

„ p. 133. *Piaya mexicana,* nobis (nec Sw.). I never obtained the true *P. mexicana.* The Guatemalan species should, I believe, be called *P. mehleri,* Bp.

„ p. 136. *Campephilus imperialis* (Gould)? This species must be erased from the list, as we never met with it; and probably my informant described *C. guatemalensis,* which is occasionally seen in the forests of the Volcan de Fuego.

„ p. 216. *Urubitinga* —— ? Appears to be the young of *Asturina nitida* (Lath.).

„ p. 221. *Scops* —— ? Probably the same as *S. choliba,* Vieill. (*Strix brasiliensis,* Temm.; *S. crucigera,* Spix), from Brazil.

„ p. 226. *Tinamus major,* Gm. ? = *T. robustus,* Scl.

1859, p. 226. *Tigrisoma tigrinum,* nobis (nec Gm.), is the northern form, *T. cabanisi.*

„ p. 227. *Eurypyga helias,* nobis (nec Pall.) = *E. major,* Hartl.

„ p. 228. *Gallinago* —— ? Nothing more than *G. wilsoni* of North America.

„ p. 234. *Podiceps* —— ? = *P. dominicensis.*

1860, p. 35. *Glyphorhynchus cuneatus* (Max.) ? = *G. pectoralis,* Scl. & Salv. P. Z. S. 1860, p. 299. *G. major,* Scl. Cat. p. 161.

„ p. 37. *Chætura* —— ? = *C. vauxi,* Baird.

„ p. 273. *Dendrœca* —— ? = *D. canadensis* ♀ (see Baird's Birds N. A. p. 271).

„ p. 274. *Chamæospiza torquata,* nobis (nec Scl. nec DuBus). The specimen obtained by me, and identified as above, was quite immature. I subsequently procured adult specimens. On seeing the type of *Pyrgisoma leucote,* Cab., in the Berlin Museum, my surprise was great on recognizing our Guatemalan bird. The true *C. torquata* (DuBus) is not found in Guatemala at all; and the bird we mistook for it (never having reexamined the adult) is *Pyrgisoma leucote.*

„ p. 276. *Heliomaster longirostris* = *H. pallidiceps,* Gould, Int. Troch. p. 139.

„ p. 278. *Sterna frenata,* Gambel. The specimen thus identified is in reality the immature of *Hydrochelidon fissipes. Sterna antillarum,* the Lesser Tern of the Antilles, does occur on the Belize coast (Ibis, 1864, p. 387).

„ p. 397. *Thryothorus felix,* nob. (nec Scl.). Additional specimens have proved the bird referred with doubt to *T. felix,* a Mexican species, to be the Wren described by Cabanis from Costa Rica as *T. modestus.* The species occurs as far south as the isthmus of Panama (see P. Z. S. 1864, p. 346). It occurs both on the Pacific coast of Guatemala and near Coban, where we obtained specimens, and whence others have lately been transmitted to the Paris Museum by M. Bocourt, the naturalist of the French Exploring Expedition.

1860, p. 397. *Parula brasiliana,* nobis (nec Licht.). = *P. inornata,* Baird, Rev. Am. Birds, pt. i. p. 171.

„ p. 398. *Coccothraustes maculipennis,* Scl. = *C. abeillii,* Less. ♀.

„ p. 400. *Chloronerpes oleagineus,* nobis (nec Reich.) = *C. caboti,* Malh.: Scl. Cat. p. 337.

„ p. 402. *Columba* —— ? = *C. nigrirostris,* Scl. P. Z. S. 1859, p. 390.

„ p. 402. *Eudocimus ruber* (L.). Must be erased from the list.

1861, p. 356. *Tinamus sallæi,* Bp. Chisec is an erroneous locality; I only obtained *T. sallæi* from the Pacific side of the Cordillera; it is probably the same as *T. cinnamomeus,* Less., and *T. delattrii,* Bp.

XIX.—*Notices of Recent Ornithological Publications.*

1. English.

It is perhaps only to be expected that in these days of examinational epidemic the feathered tribes should come in for their share of the prevailing discipline. Mr. C. O. Groom Napier has constituted himself an examiner of the British Birds, and records the results of his inquiries in a little treatise*, giving marks of approval or the contrary to each species. As the book may interest some who profess to be ornithologists, and is, we believe, the author's maiden effort, we desire to speak of it with all forbearance; but we must take leave to say that we do not subscribe at all to the rank assigned to some of the species. Why the Kestrel and Sparrow-Hawk should be placed in the second class as regards beauty of form and colour while the three common English Owls are advanced to the first, or, again, why the song of the Hedge-Sparrow should obtain a "C" mark while the Redstart comes in for a "B," are matters that pass our comprehension. On the whole, however, our author does not seem to be a very severe examiner, and we do not perceive that any birds are absolutely "plucked" by him. The most important part of the essay, in a scientific light, consists of the particulars given of the food and geographical distribution of birds outside the British islands; but here there is much room for improvement. For instance, we imagine that the berries and caterpillars of Iceland do not contribute much to the diet of the Fieldfare in August, simply because the bird does not frequent that island at any time of the year; and again there is certainly no good reason to suppose (*cf.* Ibis, 1859, p. 421) that the Shore-Lark is common in Algeria. Blemishes like these, together with a more than ordinary crop of typographical errors, may be remedied, however, in a second edition, which we hope the author will have the opportunity of producing.

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* The Food, Use, and Beauty of British Birds. An Essay, accompanied by a Catalogue of all the British Birds, with notices of their Food, the result of many hundred examinations of their stomachs, during seven years. Their geographical distribution and æsthetic value. By Charles Ottley Groom Napier. London: (Groombridge) 1865. 8vo, pp. 88.

We have been in some doubt whether a recent paper by Mr. Swinhoe did not require to be entered under a distinct heading; but it seemed, on consideration, that the announcement of a "Chinese" publication might have the effect of repelling the attention of our readers, and therefore that it would be more expedient to class the paper on the Birds and Beasts of Formosa*, which that gentleman has recently translated for the Asiatic Society of Shanghai, as an English work. If we are not mistaken, this is the first instance of a Chinese treatise on ornithology being rendered available to the English public, and on that account alone it merits special notice in these pages. It consists, it is true, of little more than a bare catalogue of

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* *Neau-Show.* Birds and Beasts (of Formosa) from the 18th chapter of the *Tai-wan foo-che* (Statistics of Taiwan). Translated by Robert Swinhoe, Esq., H.B.M. Consul at Taiwan: with critical notes and observations. Proceedings of the Asiatic Society of Shanghai, 1865, pp. 39–52.

Chinese names, which the translator has done his best to identify with described species; but we hope that the good example thus set will induce some other equally profound Sinologue to make us acquainted with the ornithological authors of the Celestial Empire.

In the 'Proceedings of the Royal Artillery Institution' of Woolwich for 1865 (vol. iv. pp. 337–339) Mr. Lord publishes a Catalogue of the Birds' Nests and Eggs collected by him when naturalist to the British North American Boundary Commission, to which a few notes are appended. We should be sorry to appear even to covet our neighbour's goods, and it would be ungenerous to grudge anything to the rising Museum at Woolwich, which is so warmly supported by "The Royal Regiment," and so carefully looked after by its active curator, our correspondent, Mr. Whitely; but, as a matter of principle, we think we may fairly object to any specimens collected by a Government Expedition—as we imagine that of the Boundary Commission was—being allowed to go elsewhere than to the National Collection. The eggs of *Corvus caurinus* Mr. Lord believes he was the first to bring home; and a rather curious fact is mentioned by him, that *Numenius longirostris* seldom lays more than two eggs.

A note by Mr. Richard Taylor, communicated to the March number of the 'Annals and Magazine of Natural History,' has no small interest in its bearing on the extension of the range of species, a subject about which so little is at present known. The author states that a bird has lately made its appearance at Wanganaui in New Zealand, and is now abundant there, doing good service in freeing the fruit-trees from the "American blight." A specimen sent to the British Museum proves the "welcome little stranger" to be the *Zosterops dorsalis* of Gould, *Z. cærulescens* (Lath.), hitherto only known as an inhabitant of Tasmania, South Australia, and New South Wales. Mr. Taylor says that "it stays the winter with us, and, we suppose, passes the summer at Taupo."

2. GERMAN.

In our recent notice of Herr von Pelzeln's Ornithology of the 'Novara' Voyage (*suprà*, p. 115), we mentioned briefly that author's remarks, therein included, on the variation in the plumage of many of the *Falconidæ*. He has now published some more general observations on this interesting subject in the 'Transactions of the Zoological and Botanical Society of Vienna' (1865, pp. 912–946), of which we should be glad to present our readers with a translation, did space allow. All English ornithologists know that White Blackbirds or Black Bullfinches are very commonly met with in country newspapers; but few persons have ever taken the trouble to collect these and similar records with the view of discovering whether some sort of theory or law may not be deduced from the facts when brought together.

The following statement shows the number of species, and the kinds of variation to which they are subject, on which Herr von Pelzeln's remarks are founded:—

"Albinismus,"	complete	32;	incomplete	45;	partial	37.
"Melanismus,"	,,	15;	,,	6;	,,	2.
"Erythrismus,"	,,	17.				

It would not be difficult to add to these numbers; and one case especially not remarked upon by our author, and which would come under the last head, occurs to us as we write. It is that of a most curious variety of the Green Woodpecker (*Gecinus viridis*), with a flame-coloured rump and yellow bands on the wing, which is in the possession of Mr. J. H. Gurney, and was described by him in the 'Zoologist' for 1853 (p. 3800); while Mr. Robert Birkbeck, in the same journal for the following year (p. 4250), mentions his having seen three or four similar examples in the Pisa Museum.

In the same journal (Verhandl. Z.-B. Gesellsch. 1865, pp. 985–986) Herr von Pelzeln also describes as new two Goatsuckers obtained by Natterer in Brazil, under the names of *Hydropsalis ypanemæ* and *H. pallescens*,—the former generally resembling *H. forcipata*, but smaller and having the three middle pairs of tail-feathers differently marked; the latter like *H. torquata*, but larger and paler in colour.

3. DUTCH.

Works on the ornithology of particular districts of Europe, even those that are most frequented by the "British tourist," are generally so little known in this country that we are glad to have the opportunity of directing the attention of our readers to the first part of a Fauna of Luxembourg, which has lately appeared from the pen of M. Alphonse de la Fontaine*, and contains an account of the birds found in that locality as far, according to the author's arrangement, as the end of the order "Passereaux." The district is that "qui forme l'ancien département des Forêts et qui constitue une bonne partie des départements limitrophes de la Moselle, de la Meuse, des Ardennes, de Sambre et Meuse, de l'Ourthe et de la Sarre, et qui actuellement est placé sous l'autorité de quatre gouvernements différents, ceux de France, de Belgique, de Prusse et du Grand-Duché proprement dit." For the settlement of doubtful points the author says he has had recourse to M. de Sélys-Longchamps, and the result is a work which, without calling for any particular remark from us, shows that in future the celebrated name of La Fontaine need not be exclusively associated with "Fables."

We have to notice—and we need not say with pleasure—two more papers of the indefatigable Professor Schlegel, contributed by him to the 'Nederlandsch Tijdschrift voor de Dierkunde' for the past year.

The first is a "Description d'un oiseau remarquable et inconnu des Naturalistes," which the author names *Charitornis albertinæ*. At first sight this curious form would seem to offer some affinity with *Streptocitta albicollis*, which has usually been ranked among the *Corvidæ*; but a further examination shows that this last really belongs to the *Sturnidæ* (*Graculæ*), to which group the new bird is also referred.

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* Faune du Pays de Luxembourg, ou Manuel de Zoologie contenant la description des Animaux Vertébrés observés dans le Pays de Luxembourg. Par ALPHONSE DE LA FONTAINE. Luxembourg: 1865 (London, Williams and Norgate). 8vo. pp. 152.

The two specimens from which the species, and genus, is described were obtained in February 1864, by the late Dr. Bernstein (whose premature death is so much to be regretted), from the island of Soula Mangouli, lying between Borneo and Mindanao. To judge from the very beautiful plate which illustrates the paper, *Charitornis* fills among the Starlings the position of *Urocissa* among the Crows.

Professor Schlegel's second paper is one which requires a more detailed notice, since it is made up of "Contributions à la Faune de Madagascar et des îles avoisinantes, d'après les découvertes et observations de MM. François Pollen et M. D.-C. Van Dam," and contains descriptions of several new species. These are *Nisus brutus, Dicrurus waldeni, Zosterops flavirostris,* and *Columba polleni* from the island of Mayotte, and *Noctua polleni* and *Xenopirostris dami* from Madagascar. Professor Schlegel is unwilling to accord specific rank to Mr. Gurney's *Tinnunculus newtoni* (Ibis, 1863, p. 34, pl. 2) and *T. gracilis* (Lesson), stating that the examples sent from the island of Nossi-Bé by MM. Pollen and Van Dam agree perfectly with a type specimen of Cuvier's *Falco punctatus* received from the Paris Museum; but, writing with a not inconsiderable series of Kestrels from Madagascar, Mauritius, and the Seychelles before us, we have no doubt whatever as to the birds from these three localities belonging to as many perfectly distinct species. It is a matter of very small importance whether the name bestowed upon the Madagascar species is to be retained or not; and this point can only be settled when we have ascertained from which island the types of Cuvier's *F. punctatus* were obtained. If they came from Madagascar, as we gather from Professor Schlegel's statement (Mus. des Pays-Bas, *Falcones,* p. 29), then the Mauritian bird, hitherto generally regarded as the true *Tinnunculus punctatus,* will require a new specific distinction. We, however, quite agree with our author in considering the *Tchitrea pretiosa* of Lesson, the *T. mutata* (L.), and the *T. holosericea* (Temm.) synonymous, these names having been applied to the same species in different plumages (*cf.* P. Z. S. 1865, p. 835).

4. DANISH.

It is so very gratifying to find an illustrious naturalist like Professor Steenstrup bringing his powers of observation to the aid of our branch of science, that we willingly go back to a period of more than three years to call our readers' attention to a short notice* communicated by him to the publications of the Natural-History Union of Copenhagen in 1863 respecting the preference shown by the Goldfinch, *Carduelis elegans,* for the pith of willow-, lime-, and thorn-boughs, and the mode in which the bird procures it. This is described as being effected by picking off the bud, and then stripping the bark—an operation in which the bird's *longicone*-beak is a very apt tool.

5. NORWEGIAN.

Herr Collett, whose work on the birds of the Christiania district was last year noticed in our pages (Ibis, 1865, p. 227), has kindly forwarded us a copy of his 'Zoological and Botanical Observations in Gudbrandsdal and Dovre'†, containing lists of the birds which occur in the neighbourhood of Lillehammer and Dovre, two important stations on the grand trunk road of Norway, and pretty well known to all English travellers in that country. It does not appear to us that the author's remarks call for any particular comment; but several localities for the less common species are indicated with more or less precision, so as to be useful to any person visiting Norway for the first time. Of our own knowledge we can add a species to the list of Dovre-fjeld birds; for we remember one of a fine pair of *Totanus fuscus* falling to the gun of our companion, and into the water of a half-frozen lake by the road-side, which was so cold that his dog, after one plunge, declined to have anything more to do with the business.

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* Iagttagelse om Stillidsens (*Fringilla carduelis,* Linn.) Forkjærlighed for Grenmarv og Maaden, hvorpaa den forstaaer at Skaffe sig denne. Af Prof. J. J. S. STEENSTRUP. (Naturhist. Foren. Vidensk. Meddelelser, 4 Marts, 1863.)

† Zoologisk-Botaniske Observationer fra Gudsbrandalen og Dovre. Af ROBERT COLLETT, Stud. jur. Christiania (Johan Dahl): 1865. 8vo, pp. 64.

6. AMERICAN.

Mr. D. G. Elliot has brought his 'Monograph of the Tetraoninæ' (*vide* Ibis, 1865, pp. 228 & 345) to a conclusion by the publication of its Fourth and Fifth Parts, which, besides seven plates of birds, contain two others representing thirty specimens of their eggs. These last are executed by Mr. William S. Morgan of Washington, and are in the highest degree successful. The following Table will serve to show in a rough way the distribution of the different species of Grouse, as nearly as we can judge from our author's labours; and since it does not seem yet to be quite certain which slope of the Rocky Mountains *Dendragapus richardsoni* and *Canace franklini* most affect, we prefer leaving them, with the very beautiful and rare *Lagopus leucurus*, in the condition that we believe our American cousins call being "on the fence."

	NEARCTIC REGION.					PALÆARCTIC REGION.					
	Vancouver's Island.	America west of Rocky Mountains.	Rocky Mountains.	America east of Rocky Mountains.	Greenland.	Iceland.	British Islands.	Spitsbergen.	Continental Europe.	Continental Asia.	Japan.
Bonasa umbellus	..	..	..	*							
—— umbelloides	..	*	*	*							
—— sabinii	*	*									
—— sylvestris	..	..	..	..	..	..	..	..	*	*	*
Tetrao urogallus	..	..	..	..	..	..	*	..	*	*	
—— urogalloides	..	..	..	..	..	..	..	..	..	*	
Dendragapus obscurus	..	..	..	*							
—— richardsoni	..	..	*								
Canace canadensis	..	..	..	*							
—— franklini	..	..	*								
Falcipennis hartlaubi	..	..	..	..	..	..	..	..	..	*	
Lyrurus tetrix	..	..	..	..	..	..	*	..	*	*	
Centrocercus urophasianus	..	*	*	*							
Pediœcetes columbianus	..	*	*	*							
—— phasianellus	..	..	..	*							
Cupidonia cupido	..	..	..	*							
Lagopus albus	..	*	*	*	..	..	..	..	*	*	
—— scoticus	..	..	..	..	..	..	*				
—— mutus	..	..	..	..	..	..	*	..	*	*	?
—— rupestris	..	..	..	*	*	*					
—— hemileucurus	..	..	..	..	..	..	..	*			
—— leucurus	..	..	*								

It is only fair, after our former remarks, to say that in his

Introduction Mr. Elliot rejects *Lagopus persicus* as a species, and, as we also think rightly, he considers *L. rupestris* to include the so-called *L. americanus* of Audubon, the *L. reinhardti* and *L. grœnlandicus* of Brehm, and the *L. islandorum* of Faber. Whether *L. hyperboreus* (or, as we prefer to term it, *L. hemileucurus*) should not also be referred to this species, is a point on which we have before stated our opinion (Ibis, 1865, p. 504); but counting it, as well as *L. scoticus*, we find that, out of the *twenty-two* supposed species of Grouse, *fourteen* inhabit the New World, while *ten* occur in the Old World, and only *two* are common to both regions: and, again, taking the genera in which our author disposes them, we have *five* peculiar to the Nearctic Region, *three* to the Palæarctic, and *two* common to both; so that, if there be any truth in Mr. Wallace's theory, Grouse have had their origin in America. While congratulating our good friend on the completion of this work, we are happy to announce that he has another monograph in a forward state of preparation, the subject of which is the beautiful family of *Phasianidæ*.

In the 'Annals' of the New York Lyceum of Natural History for 1865 Mr. Lawrence has three papers, in the course of which he describes as new a dozen birds from Central America. These are *Spermophila hicksi* and *S. fortipes* from Panama, *S. badiiventris* from Greytown, and *S. collaris* from Chiriqui, *Formicivora schisticolor*, *Mitrephorus aurantiiventris*, and *Elainea frantzii* from Costa Rica, besides two other species of the last-named genus from Chiriqui, which the author calls respectively *E. chiriquensis* and *E. semiflava*, with *Thryothorus brunneus*, *Synallaxis nigrifumosa*, and *Thamnophilus hollandi* from Greytown. The papers also contain an enumeration of, with a few remarks on, two collections from Chiriqui and Greytown, the first, containing thirty-nine species, formed by Mr. Frederick Hicks, and the second, containing sixty-one species, formed by Mr. H. E. Holland.

XX.—*Letters, Announcements, &c.*

The following letters, addressed "To the Editor of 'The Ibis,'" have been received:—

5 Peel Terrace, Brighton,
March 1, 1866.

Sir,—In 'The Ibis' for 1861 (p. 113) I expressed my belief that the Serin (*Serinus hortulanus*, Koch) would prove to be a not unfrequent visitor to the south coast of England, and I mentioned that several reported instances of its occurrence had come to my knowledge, but without dates or particulars.

A specimen killed in this neighbourhood has long been in a bird-stuffer's window here; and a few days ago Mr. Swaysland sent for me to inspect a skin recently forwarded to him by Henry Byne, Esq., of Miligan Hall, Bishop's Hull, Taunton, who wished to know what it was. I requested Mr. Swaysland to obtain further details for me, and these I have in Mr. Byne's letter now before me. The bird was killed "in the last week of January 1866, by William Gorett, Esq., in a small garden surrounded by trees, in Bridge Street, North Town, Taunton. It perched on a tree and was shot for a Sparrow, but there were no other birds there at the time. . . . I saw the Serin Finch the day it was killed."

There is still, of course, the probability of the bird having escaped from captivity to be got over, but I dare say we shall have others to report in due course of time. The season of the year in this case is to be remarked—midwinter, while the instances recorded by Mr. Bond ('Zoologist,' p. 7105) bear date 20th June and October, 1859.

It appears like a British bird, but I do not wish to manufacture one without more examples.

I am, &c.,
Geo. Dawson Rowley.

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10 Torrington Place, Plymouth,
March 8th, 1866.

Sir,—The other day, in looking over 'The Ibis' for 1862, I met with a Review of the 'Memoir of Thomas Bewick,' the writer of which, in a note (at page 377), gives, so far as he can, a list of Bewick's publications. I can add the fact that he engraved figures for a work not named in this list; for I have a copy of "A New Family Herbal, or Popular Account of the Natures and Properties of the various Plants used in Medicine, Diet, and the Arts. By Robert John Thornton, M.D. The Plants drawn from Nature by Henderson; and engraved on wood by THOMAS BEWICK. London: Printed for Richard Phillips, Bridge Street, Blackfriars. 1810." The book is dedicated to Dr. Andrew Duncan; and the author when addressing him, after alluding to his work 'The Edinburgh New Dispensatory,' in speaking of his own says, "Nothing more was required than simply to tread in your footsteps, adding figures by such an artist as Bewick," &c. Of these figures there are more than two hundred and fifty, some of them so well done as to lead one to think that Bewick in some cases took them from nature rather than from Henderson's drawings.

I have never seen this work mentioned in connexion with Bewick's name; and as he did so much for the science of Ornithology, I venture to send you this notice of it.

I am, Sir, your obedient servant,
T. R. ARCHER BRIGGS.

Museum, Trinity College, Dublin,
March 1866.

SIR,—In the 'Proceedings of the Zoological Society of London' for 1861 (p. 400), mention is made of a specimen of the egg of the Ivory Gull, *Pagophila eburnea*, procured from Dr. Baldamus, but no allusion to the existence of any other specimen is added; and, again, in the "Notes on the Birds of Spitsbergen" in 'The Ibis' for last year, a translation is given (p. 507) from one of Dr. Malmgren's papers on the same subject, of a paragraph relating to the discovery of some more examples of the eggs of this species; and there is prefixed to this extract the statement that these were "the first well-authenticated specimens brought to Europe." Allow me therefore to call your attention to a very much earlier record of the discovery of the Ivory Gull's egg, and one which I trust you will agree with me in considering to be equally well authenticated.

On Commodore Sir Leopold M'Clintock's return from the Arctic Expedition of 1852–53, in the course of which he accomplished that marvellous sledge-journey of over 1400 miles, though compelled by the exigencies of the case to throw away almost all the specimens of natural history which he had collected, he succeeded in bringing home with him to Ireland a few fossils (shells and corals) and *an egg of the Ivory Gull.*

The following extracts from Sir Leopold's diary, written on the spot, show the circumstances under which this interesting specimen was obtained :—

"From the 12th to the 15th of June we were examining the Polynia Islands, the northernmost of which I have called 'Ireland's Eye.' It lies almost under the 78th parallel. None of these islands are more than 60 feet above the sea, and they are entirely composed of gravel. Upon one I saw two bird's nests of former years. They were chiefly made of moss; and much more of it had been used in their construction than I had seen growing upon the whole group. The broken pieces of egg-shell were of a pale olive-colour, with irregular dark-brown blotches." On the 18th of June the return-journey commenced, and on the 20th Sir Leopold was on the east shore of Prince Patrick's Island. He writes, "as I was rounding Cape Krabbé, lat. 77° 25′ N., long. 116° W., I saw an Ivory Gull seated upon her nest on a bare patch of gravel, near the beach. There was one egg in the nest. The nest was exactly the same as those seen on the Polynia island; but in addition to the moss, there was a little white down and a few feathers in it. This nest had served for several seasons."

Thus far Sir L. M'Clintock's account, which I consider to be conclusive; but knowing how very accurate one should be in these matters, and how hard it is to convince an oologist of the authenticity of a rare egg, allow me to place the evidence thus :—

1st. Sir Leopold saw the Ivory Gull on her nest.

2ndly. There was only one nest seen at the time.

3rdly. In the nest he found an egg, which he took and brought home.

4thly. I have his word for it that it was the only egg picked up by him on this journey; and this specimen is now in the Museum of the Royal Dublin Society.

Now it strikes me that the only possible error in the above could arise from Sir L. M'Clintock not knowing the Ivory Gull; but against this we have the facts, that no species of Gull was better known to him, that he was constantly on the look-out for its breeding-places, that at the very moment of finding the nest he was expecting to see the bird, as he had always met with it further north than any of the other Gulls (the first seen on this journey had been on the 12th June, in lat. 77° 30′ N., long. 116° W.), and that *Larus glaucus* and *Stercorarius parasiticus* were the only other birds seen on Prince Patrick's Island—birds not likely to be confounded by Sir Leopold with *Pagophila eburnea.*

I may add that an account of the nidification of this Gull, by Dr. Carte, will be found in the 'Journal of the Royal Dublin Society' for July 1856 (vol. i. pp. 57–60, pls. 1 and 2); and the egg was exhibited at my request at a meeting of the Dublin University Zoological and Botanical Association in February 1855. Sir Leopold's journal may be found printed in one of the "Blue Books" on the Franklin Searching Expeditions, but the above extracts I myself took from his note-book shortly after his return.

I am, &c.,

E. PERCEVAL WRIGHT.

[We are extremely indebted to Professor Wright for calling our attention to this interesting fact, of which we and probably many of our readers have hitherto been entirely ignorant. Dr. Carte's paper referred to above is accompanied by a very well-executed figure of the egg of the Ivory Gull brought home by Sir Leopold M'Clintock, to whom our friend Dr. Malmgren must certainly yield the honour of the discovery.—ED.]

Mr. P. L. Sclater has kindly sent us the two following notes, which were addressed to him by their respective writers. The first is from Captain George E. Bulger, C.M.Z.S., and is dated "Bangalore, 31st July, 1865."

"An interesting sight presented itself to a friend of mine and myself during our walk this evening. As we turned the corner of one of the lanes at the back of the Arab lines, our attention was attracted by a Crimson-breasted Barbet (*Xantholæma indica*) which flew close past us, and lit upon a thin, sickly looking mango tree, with branches overhanging the wall of the compound on our left. We stopped for a moment to observe its movements, and, as we did so, a second bird of the same kind darted out, apparently from the same tree, seized some insect in the air, and then, returning, alighted beside its comrade. The tree was a small one, and its foliage scanty, so that, not only were we enabled to see the elegant plumage of the Barbets very distinctly, but we were also made aware of the presence, upon one of the lower branches, of a Madras Bulbul (*Pycnonotus hæmorrhous*) and a pair of Flycatchers, which appeared to me to be the White-browed Fantail of Jerdon (*Leucocerca albofrontata*). Before we had time to consider whether there was anything strange or not in the appearance of these birds in such close proximity to one another, the secret of their assembling at that particular spot was revealed to us. Directly in front of the tree, white ants were rising from sundry small holes in the road and flying slowly upwards through the clear atmosphere. Evidently an exodus of the winged members of the termite city was commencing, and, by some means or other, it had become known to the Barbets and their friends, who, accordingly, had made a point of being present, with a view to a luxurious evening meal. At first the work of destruction seemed likely to be most fully consummated; for the moment one of the hapless insects emerged into upper air, he was pounced upon by a Barbet or a Flycatcher, and carried off to be discussed at leisure amongst the branches of the mango tree, or else he was seized and borne away, apparently with some difficulty, by one of the many large dragonflies which were cruising about in the neighbourhood. Notwithstanding all this, however, the numbers of the termites were gradually increasing, and there was, at last, a faint chance of some few of them escaping to enjoy their emancipation from the dark, damp chambers of their subterranean abode: but at this moment a score of new foes made their appearance upon the scene, shooting in suddenly and noiselessly, upon long sickle-shaped wings, and with a rapidity that reduced to utter insignificance the volant capabilities of either the Barbets or the Flycatchers! They were Swifts—of the common Indian species (*Cypselus affinis*), and it was really most interesting to behold the speed with which they dashed through the air, and the wonderful accuracy with which they seized the luckless insects, without permitting their own flight to be arrested in the least degree. Backwards, forwards, here, there, everywhere, they darted in all directions, and almost every instant we heard the snapping of their bills as they closed them on their ill-starred prey."

The second note is from our correspondent Mr. E. L. Layard of Cape Town, and is dated "South African Museum, December 19th, 1865." It has reference to an inquiry of our own respecting the swimming of Skuas (Ibis, 1865, p. 526), a subject on which we have already printed a letter from Mr. Whitely (*vide suprà*, p. 127). Mr. Layard says, "*Stercorarius parasiticus* constantly sits on the water and swims about hunting for food, and I have shot it more than once in the act of doing so. My son also has recalled to my mind that the first time he shot one was out of a flock sitting and swimming in Table Bay."

To Mr. Blyth we are indebted for some extracts from his Indian correspondence, which we doubt not will be welcome to our readers. The first is from Captain Blair, and refers to some birds of Ross Island, one of the Andaman cluster. It is dated Port Blair, June 1865:—

"*Copsychus saularis* is common about houses and gardens, and is much more familiar than in Bengal. It sings very sweetly.

"*Temenuchus erythropygius*, common, apparently nesting now. I captured a pair stealing plantains hung up in a store-room window. They were caged, but died at sea.

"*Acridotheres tristis* is common, and was, I believe, introduced by Col. Tytler, from Calcutta. The race, however, appears to be smaller and *darker* in colour than that of Bengal, approximating in this respect to that of Burmah.

"A pair of *Corvus splendens*, also introduced by Col. Tytler, are all that are left of those he brought, and, being probably of the same sex, have not bred.

"The Common Crow is very abundant—an undoubted Carrion-Crow, but, I think, erroneously referred to *Corvus culminatus*. It *appears* larger (I have *not* carefully examined specimens), and the caw is much more like that of an English Rook*.

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* True *C. culminatus*, E. B.

"A Tern, very common, appears referable to *Onychoprion melanauchen.* It was, I think, breeding at the time of my visit on an island off the south outpost. I was not well enough, however, to explore the spot, although I noticed old birds carrying small fish there.

"Of the large Sea-Eagle (*Haliaetus leucogaster*) there are generally a pair about Ross Island, and I have noticed them seated on rocks on the mainland, and frequently heard their clanging scream amongst the high trees near the sea.

"Four specimens of *Chalcophaps indicus* were brought to me alive from Aberdeen, where they were snared by settlers as 'green Pigeons;' one pair were adult, and one pair fully-fledged young; so that it is evident they breed on the Andamans. Reported to be plentiful. *Collocalia fuciphaga* takes to breeding inside houses, preferring inner rooms both on Ross and Chatham Islands. A large *Acanthylis* (?) has been observed on Ross Island.

"*Todirhamphus collaris, Halcyon fuscus,* and *H. leucocephalus* are very common. The former descends to the ground to feed—perhaps on hermit crabs, which are very common; the latter has the head much whiter than in Bengal.

"Other birds collected here are *Gracula intermedia, Palæornis erythropygius, Artamus leucogaster, Picus andamanensis**, *Edolius malayensis, Irena puella, Butorides javanicus, Ixus jocosus.*

"A Honey-sucker which looked like the female of *Arachnecthra asiatica* seen on Ross Island."

Dr. Jerdon, writing in October last to Mr. Blyth from Umritsir, says:—

"I have been in Cashmere for a short time this season, but did very little. The only rare bird I got was *Ægithaliscus niveogularis,* which I obtained at a height of 10,000 feet. I obtained one *Nucifraga multimaculata* also at a great elevation.

"I have been getting some live Falcons here—and among them *Falco cherrug,* as many as I pleased to buy. *F. babylonicus,* two young females, and one adult of the same sex! the latter I have skinned, the former I keep alive. It is the 'Shahin' *of these parts,* and is caught in the neighbourhood. I have sent for more. * * * I have heard of a small Falcon caught here called the 'Keytal Turoomtee' and used in hawking, but not *Hypotriorchis chicquera*; it may be Hobby or Merlin: but I am promised some shortly. I am now going to hawk Houbara with the Cherrug, and to do a little more of the desert-country. I hope to get *Grus leucogeranus*, dead or alive."

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* This also inhabits Sumatra.—E. B.

Dr. David Scott, in a letter to Mr. Blyth, dated "Umballah, November 4th, 1865," says:—

"This year I had two Hoopoes' [*Upupa epops*?] nests in my verandah; and after the hens began to sit I never saw them outside at all, but the two males fed them regularly inside the nest. When Colonel Tytler came down some time last month, I mentioned that I was almost positive that the hen Hoopoe never left her nest during the period of incubation. He said at once that this was curious, as you believed the Hoopoe was nearest in structure to a species of *Buceros* in which this was the case. As you are aware, I have not the very slightest pretension to be an ornithologist in any way beyond mere observation; I was therefore quite ignorant of what Col. Tytler mentioned, as well as Dr. Jerdon directly I told him.

"These two pairs of Hoopoes were so tame and used to seeing me sitting in the verandah, that my presence never disturbed them in the least; and I twice saw the males tread the females just at the bottom of the steps, and within ten yards of where I was sitting. I was therefore thoroughly familiar with them, and can assert most positively that, for a number of days, I never saw the female of either pair out. I did not pay any attention at first to the circumstance of there being only two flying about, until I observed both males going up to the nests with gnats in their bills, giving a call, and then putting their heads inside for the hens to take the food. The feeding-times were morning and evening, at regular hours, the former about seven or eight o'clock, and again in the afternoon about four o'clock.

"I have seen the males getting the gnats, &c., close under the very steps I was sitting on, and almost within two yards of my chair, then flying up, giving a call, and coming down again directly the food was taken. The nests were at opposite ends of the verandah, and only one of the broods came out. I saw some time ago a notice in 'The Field' mentioning the dirty state of the nest before this would have been caused by the young; and if my idea is correct the explanation is simple. I never saw the males go inside the holes in which the nests were; and I never saw either of the females outside during the time they were hatching, though of course it is possible they may have gone out. If I should live, I will next spring observe more carefully; but it was a good while before I noticed the absence of the females this year. Last year I had one nest only in the verandah, and another in the verandah of my office. The Hoopoe, I know, breeds in France; and possibly you may be able to find out if any notice of this fact has been taken."

Professor Baird has kindly transmitted to us some extracts from old or little-known works bearing reference to the former occurrence of *Alca impennis* on the coast of America. The earliest of these is from "A discourse and discovery of Newfound-land, etc., written by Capitaine Richard Whitbourne of Exmouth in the County of Devon * * * Imprinted at London, by Felix Kinston, 1622," and is as follows:—

"There are also birds that live by prey, as Ravens, Gripes [Eagles], Crowes, etc. For water fowle there is certainly so good and as much variety as in any part of the world, as geese, ducks, pigeons, gulls, Penguins, and many other sorts.

"These penguins are as bigge as geese, and fly not, for they have but a little short wing, and they multiply so infinitely upon a certain Iland that men drive them from thenes upon a boord into their boats by hundreds at a time, as if God had made the innocency of so poor a creature to become such an admirable instrument for the sustentation of man."

Another from "New Englands rarities discovered in birds, beasts, fishes, serpents, and plants of that country, etc. By John Josselyn Gent: London, 1672," runs thus:—

"The wobble an ill-shaped fowl, having no long feathers in their pinions which is the reason why they cannot fly, not much under the Penguin; they are in the spring very fat or rather oyly, but pulled and garbridged and laid to the fire to roast they yield not one drop.

"The Loone is a waterfowl alike in shape to the wobble."

Professor Baird remarks that "the author resided for eight years at 'Scarborow' a hundred leagues to the east of Boston, and speaks of the White Mountains at that time being covered with snow all the year round."

The third extract we shall quote is from "Il Gazettiere Americano, continente un distinto ragguaglio di tutte le parti del nuovo mondo, etc. Tradotto dall' inglese e arricchito di aggiunte note, carte, ermai. Livorno 1763."

Under the head of "Terra nuova" occurs the following paragraph (vol. iii. p. 158):—

"L'uccello, che si vede nell' annessa tavola [a very good figure of *Alca impennis*] si trova piu frequentemente quivi, che altrove. Quantunque venga comunemente chiamato il Penguino del Nord, è molto differente da quello detto il Penguino del Sud, col quale è stato da alcuni erroneamente confuso. La sua grossezza è simile a quella dell' oca domestica, ed acciò se ne possa meglio giudicare, si veddono appie della carta la testa ed il becco, nelle loro vere misure."

We may here add the information that very recently Mr. Flower, the Curator of the Museum of the Royal College of Surgeons, has found among the stores of that establishment nearly all the remaining bones of a skeleton of *Alca impennis*, the existence of which had not been previously suspected, only a few of the more important bones having been exhibited in the Museum. This specimen is believed to have belonged to John Hunter.

It seems very probable that our suggestion (Ibis, 1865, p. 530) as to the possibility of the *Oxynotus* of Mauritius being specifically distinct from that of Réunion will prove correct. M. François Pollen writes to us from St. Denis in the island last named that he has lately visited Mauritius, and on comparing after his return a specimen of *Oxynotus ferrugineus*, which he obtained while there, with examples of the Réunion bird, he is struck with the differences observable between them; but as he kindly promises us a further communication on the subject, we need not at present say more about it.

THE IBIS.

NEW SERIES.

No. VII. JULY 1866.

XXI.—*The Ornithology of India.—A Commentary on* Dr. Jerdon's *'Birds of India.'* By Edward Blyth, late Curator of the Museum of the Asiatic Society at Calcutta, Hon. Mem. As. Soc.

Upon looking over Dr. Jerdon's three volumes, with the view to comment upon them, I was surprised at first to remark how little seemed to be needed in the way of emendation, considering the number of species and also the extent of territory comprised within the geographic limits to which the author has restricted himself; but on proceeding with my task, I was led from inquiry to inquiry, and from one result to another, in the investigation of synonyms and examination of type specimens in various collections, until this series of notes has gradually attained a length far beyond what I had originally anticipated.

In India I had the privilege of inspecting most of the proof-sheets of the first volume, and any suggestions that I had at the time to offer were of course at the author's service; whilst various identifications at which I arrived on my return to England in March 1863 are inserted in the Appendix at the end of his third volume. In 'The Ibis' for 1865 (p. 27 *et seq.*) I further endeavoured to elucidate the synonymy of various species, and it is not probable that much now remains to be accomplished in that particular department, additional to what I have now to bring to notice; but it is likely that a few more species will have to be added from the desert territory of the north-west, as also from the extreme south of the peninsula, where it may be expected that some of those will be found to inhabit which at present are known only from Ceylon. Indeed the latter are so few in number, and those few *congeneric* in every instance (or at least approximately so in the only two slightly exceptional cases*) with birds of continental India, that their exclusion from Dr. Jerdon's work must be regretted. In a note to his Introduction (p. xxxix) he indeed remarks, "I would greatly like to have included all British India, from Assam to Tenasserim and Ceylon, in the scope of the present work; but I was afraid that this addition would have swelled my work to an unwieldy bulk." To me it appears that the great Indo-Chinese subregion, from the valley of the Bráhmapútra southward, might very well be separately treated of; whereas Ceylon is undoubtedly subordinate to the special Indian subregion, notwithstanding that a contrary opinion has been expressed†. Some thirty to forty species of birds only (as specific distinctions are variously admitted, and some of these distinctions are very slight) are known to me at present as being peculiar to the island, several being merely specialized insular representatives of kindred races—or very near congeners—on the mainland, though the limits of this specialization can only be arbitrarily traced; while others are most strongly characterized species, the recognition of which must be universally accepted. As examples of the former may be mentioned *Loriculus coulaci* as distinguished from *L. vernalis*, *Pomatorhinus melanurus* from *P. horsfieldi*, *Palumbus torringtoni* from *P. elphinstonii*; and as examples of the latter may be adduced the Jungle-fowl and Spur-fowl of Ceylon (*Gallus stanleyi* and *Galloperdix zeylanensis*), a fine Parrakeet (*Palæornis calthrapæ*), with *Athene castanotus, Toccus zingalensis* (*verus*), *Phœnicophaus pyrrhocephalus, Centropus chlororhynchus, Megalæma flavifrons, Cissa ornata, Eulabes ptilogenys, Temenuchus albofrontatus, Garrulax cinereifrons, Meropicus atricapillus,* and others, nearly all of which are peculiar to the mountainous part of the island, where also are many species which occur only on the highest grounds in Ceylon and those also of South India. Again, certain stragglers have been noticed on the island which have not yet been ascertained to occur in the peninsula of India, as *Spizaetus nipalensis, Goisachius melanolophus,* and *Tringa albescens**; and it is likely, as before remarked, that more species will yet prove to inhabit alike the island and the southernmost part of the peninsula, for it is certain that neither the one nor the other has as yet been adequately explored. The Cinghalese *avifauna* is more particularly treated of in the sequel.

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* *Phœnicophæus*, as distinct from *Xanclostomus* (v. *Melias*) and *Meropixus*, Bonap. (Comptes Rendus, 1854, xxxviii. p. 58), founded upon a species peculiar to Ceylon, but which is barely separable from *Rubigula*, nobis.

† *Vide* Tennent's 'Ceylon' (Introduction, p. xxxii, &c.). The principal argument relates to the Cinghalese Elephant, which was supposed to be identical with that of Sumatra, but not with that of India. I am now completely convinced of the specific identity of all living Asiatic Elephants (as far as hitherto discovered at least, and it is most improbable that another should yet remain to be distinguished); and such was the matured opinion of the late Dr. Falconer, unquestionably the highest authority for the species of Proboscideans, living or extinct.

From the base of the Himálaya to the sea there is a much greater amount of uniformity in the fauna of India than exists throughout that region as compared with the southern or Indian flank of the grand Himalayan chain. The sub-Himálayas, as Mr. Hodgson denominates the mountains which do not attain to the altitude of perpetual snow, have a vast number of genera, and even species, in common with the Indo-Chinese subregion, increasing in number eastward, which are unknown in India south of the Himálaya; while in a northerly direction there is a considerable influx of generic types, and even species, common to West Asia and Europe, and African types come up through South Arabia and Beluchistân to Sindh and Rájputána—the Indian desert territory. To extend the bounds of "India" beyond the Himalayan snows, or the passes of the Sulimáni chain, into Afghánistân, amounts to the confusion of all ideas of an *Indian* entity; but the north-east boundary is less marked, and so few *known* species would need to have been added from the valley of the Bráhmapútra and neighbouring hills, additional to those admitted from Sikhim and from Eastern Bengal, that, together with the Ceylon species, they would not have materially increased the bulk of Dr. Jerdon's volumes. To a very great extent, and indeed essentially, the sub-Himalayan fauna, up to the zone of *Coniferæ*, is an extension westward of that of the Indo-Chinese subregion, as contrasted with the fauna of India proper; and the same more eastern fauna, in its low-country forms, extends also to the Bengal Sundarbáns and along the *tarai* or marshy tract at the foot of the northern hills. A very marked change becomes apparent on quitting the alluvium of the lower Ganges in a westerly direction, where sundry species common to the Indian peninsula with Ceylon at once present themselves abundantly which never stray into Lower Bengal, while not a few of the more characteristic species of Lower Bengal and of the Indo-Chinese countries disappear as suddenly and entirely.

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* *Vide* Swinhoe, in 'Ibis,' 1864, p. 420. *Goisachius melanolophus* has also been received from Ramri Island (Arakan).

In the higher ranges of the sub-Himálayas the Indo-Chinese and more tropical forms give way, for the most part, to those characteristic of the temperate parts of Europe and Asia; and the *Fringillidæ*, in particular, become very numerous in species, which, southward of the Himálaya, are replaced by *Plocei* and *Estreldinæ*, one species only (*Carpodacus erythrinus*, besides *Emberizinæ*) extending far into the plains as an ordinary winter visitant. The connexion of the *avifauna* of the Himálaya with that of the plains is indeed chiefly maintained by species which resort to the hills to breed and return to pass the winter southward, insessorial birds being chiefly here referred to.

The proper Indian fauna, as distinct from the sub-Himalayan, culminates in the hills of Southern India and especially of Ceylon; but a few peculiar species are elsewhere scattered within the area of that particular fauna, as notably the remarkable Tree-creeper, *Salpornis spilonotus* (akin to the Australian form *Climacteris*), in the jungles of Behar, and the Courser-like wader, *Rhinoptilus bitorquatus* (with a sole African congener), in Northern Coromandel. The great plains of Upper India are reproduced in the tableland of the Dukhun, where again are characteristic species (common to both) which have not been observed elsewhere; such are *Hirundo concolor*, *Pericrocotus erythropygius*, and *Malacocercus malcolmi*. But though subordinate provinces are more or less traceable, as indicated by Dr. Jerdon in his Introduction (xxxix *et seq.*), the most prominent distinction is undoubtedly that of forest-clad hill and broken country, on the one hand, and the great plains which are almost bare of natural jungle and extensively under cultivation, on the other. It would occupy more space than could be conveniently spared to venture upon details of physical geography, which cannot be briefly disposed of with advantage to the reader; so, having called attention to Dr. Jerdon's remarks in his Introduction, which apply more particularly to India southward of the Himálaya, I do so likewise to a valuable paper by Mr. Hodgson, 'On the Geographical Distribution of the Mammalia and Birds of the Himalaya,' which is published in the 'Proceedings of the Zoological Society' for 1855.

In the matter of classification Dr. Jerdon holds to the antiquated notion of associating the Parrots with the other zygodactyle birds, the Swifts with the Swallows, the *Eurylaimi* with the Rollers, the *Trochilidæ* with the tenuirostral *Passeres* (as likewise *Upupa* and *Promerops*), and—a degree less in violation of true affinity—the *Henicuri* with the *Motacillæ*; while he approximates *Menura* to the *Megapodiidæ* (ii. p. 470)! thus failing, in my opinion, to appreciate the import of the anatomical and more important distinctions. However, as regards the Swifts and Swallows, he quotes (i. p. 155) Van der Hoeven, who remarks, "I trust it is not to be ascribed solely to custom and to prejudice in favor of a division generally adopted, if I cannot divest myself of this opinion, *viz.*, that Swallows and Swifts should be classed together;" also Kaup, who declares that, "To separate the *Cypselidæ* from the *Hirundinidæ* cannot enter the mind of any one whom scholarship has not deprived of all sense of natural order;" again, "From all these arrangements it would appear that men, otherwise most capable, if pre-occupied in favour of some particular characteristic type, will, in accordance with these and in defiance of nature itself, tear asunder the most natural connections, merely to unite forms like the *Cypselidæ* and *Trochilidæ*, which in all other respects are dissimilar." In what respect, it may be asked, beyond adaptive modifications of the same special type for different purposes? even as the Swallows and the Treecreepers, the Honeysuckers and the Finches, are analogously different modifications of the same special *passerine* type of organization. Prof. Kaup's views I would, on the contrary, stigmatize as unmitigated heresy, to be repudiated by every devout ornithologist. What is there but superficial resemblance as opposed to intrinsical conformity?—the identical principle which would include the Hyæna under *Canidæ* instead of *Viverridæ,* and would make a Squirrel of the Chinchilla, a Rodent of the *Chiromys* or of the Marsupial Wombat, or an ordinary Edentate of the Monotreme *Echidna,* which not only would consider *Anguis* to be an Ophidian, but would put the Salamanders in among the Lizards, the Cetaceans among Fishes, the Orthopterous *Lepisma* among Crustacea, the Crustaceous Barnacle among Shelled Mollusks, and the *Ascaridæ* among the Red-blooded Annelides; which would make a Leech of a *Planaria,* and in botany would refer the tree ferns, the *Cycadaceæ,* and the pandanaceous *Nipa* to the order of palms! Prof. Kaup's opponents in this matter may perhaps be excused if they likewise venture to indulge in a little mild *fanfaronnade.* They cannot help recalling to mind that redoubtable popular group of "shell-fish," which comprehends Oysters and Snails (Whelks and Periwinkles) and Lobsters, with Turtles and (may be) Armadillos, and the *Echinidæ* of course,—this notable aggregation comprising alike forms of the *Vertebrata, Annulosa, Mollusca,* and *Radiata.* Scientific zoology discriminates between real and merely seeming and superficial distinguishing characters, fundamental affinity from its deceptive guise, mere adaptive modifications from the more comprehensive special bases of the organization, and the "mocking" of one group by members of another (which Bates and Wallace have shown to exist among the Butterflies), so many instances of which at once arise to the recollection. It is the business of the naturalist to disentangle all such intricacies, to go deeper than the surface, and try to find out what objects really are, and not what they only seem to be. Imbued with this idea, it appears to me that the association of the Swifts and Swallows in one family, or even immediately higher group, is about tantamount to subordinating the Shrews among the *Muridæ*—or the Tupayes among the *Sciuridæ*—in the class of Mammalia. The *Hirundinidæ* illustrate and exemplify, even to the minutest detail, the special *passerine* type of conformation, which is merely modified externally to confer extraordinary vigour of wing. The *Cypselidæ* have not even one characteristic of that very variously modified special ornithic type, and internally as well as externally—in the bony framework equally with the exterior adaptations—are modified to attain the maximum power of flight; and the same remark applies to the *Trochilidæ*. There is a fundamental conformity in the organization of the *Cypselidæ* and *Trochilidæ*, analogous to what exists in the genus *Indicator* and the great family *Picidæ*, and which alike removes *Indicator* from *Cuculidæ* and *Cypselidæ* from *Hirundinidæ*; and in the same way *Leptosomus*, which has been commonly assigned to *Cuculidæ*, is far more nearly akin to *Coracias* and *Merops*, if not also (as I long ago suggested) to the South American family *Bucconidæ*, which latter group I formerly styled *Tamatiadæ**, and separated altogether from the special group which comprehends the *Rhamphastidæ* and kindred *Megalæmidæ* and *Capitonidæ* (if these latter can be properly recognized apart). There is no occasion to pursue this subject further here, as in the sequel I have found occasion to comment on the affinities of particular groups. Let me now, therefore, proceed to the special object of this contribution, which will occupy a good many pages of the 'The Ibis.'

In his first page the author states that the rapacious birds have "all their toes upon one plane,"—the kindred genera *Sarcorhamphus* and *Gyparchus*, and *Cathartes* also to some extent, being the only exceptions that I know of, alike appertaining to the minor continent.

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* Mag. Nat. Hist. n. s., 1838, p. 317. *Vide* also p. 256 *et seq.* of the same volume for remarks exceedingly in unison with what I have now written, and which I have been led to peruse upon having occasion to seek for the date of them. Two mistakes occur, however, the rectification of which is necessary to render my papers of 1838 as intelligible as they would otherwise be. I mistook *Pteroptochus* (or some kindred form) for *Megapodius*; and by *Promerops* I intended sundry *passerine* birds which were then usually classed in that genus, as distinguished from the real African *Promeropidæ*, which are intermediate to *Bucerotidæ* and *Upupidæ*. With this explanation, the outlines of classification which I then proposed are very nearly the same as what I at present adopt and adhere to, with the advantage of greatly increased information and of more than a quarter of a century of further experience.

The numbers which I proceed to cite are of course those of Dr. Jerdon's work.

2. VULTUR CALVUS (Gould's B. As. pt. xii.).

That *V. imperialis,* Tem. (Pl. Col. 2), should be referred to the present species is surely precluded by its superior size and the yellow colour of the bill. The actual specimen figured is assigned by Professor Schlegel to *V. auricularis*:—"Très vieil individu, qui a longtems vécu dans la Ménagérie, Afrique." (Mus. des Pays-Bas, *Vultures,* p. 9.) There is a fine living individual of *V. calvus* at present in the Gardens of the Zoological Society of London.

3. GYPS FULVUS.

Professor Schlegel distinguishes as varieties of this species *Vultur occidentalis,* from the warm parts of Europe to the west of Italy, and North Africa; *Vultur indicus,* Temm. (Pl. Col. 26), from India; *V. rueppelli* (a well-marked distinct species, now living in the Zoological Gardens), from Africa; and *V. kolbii,* from South Africa. Mr. Gurney does not acknowledge these distinctions, with the exception of *Gyps rueppelli*; and a specimen which I received as *G. occidentalis,* from Algeria, was simply the female of *G. fulvus*; for in the *Vulturidæ* (inclusive, as I suspect, of the *Polyborinæ*), unlike the *Falconidæ* and *Strigidæ,* the female sex is always the smaller.

3. GYPS INDICUS (*verus*).

Professor Schlegel does not appear to know this well-marked species; for he puts *V. tenuirostris,* Hodgson, as a doubtful synonym of *G. bengalensis*! The figure by Mitchell, in Gray's 'Genera of Birds' (pl. 3), represents the plumage of immaturity. The adult has a white ruff as in *G. fulvus,* and a very few scattered small downy tufts on the bare black head and neck. Sig. Antinori notices it (by its synonym *V. tenuirostris*) as occurring in Central Africa (Catalogo, &c. p. 5). It is the only Vulture which I have seen in collections from the Malayan peninsula, though the late Dr. Theodore Cantor procured *G. bengalensis* at Pinang (P. Z. S. 1854, p. 258). From *G. fulvus* it is conspicuously distinguished by its much smaller size, comparatively slender bill, with the ceral portion of it remarkably elongated, and by the head and neck of the adult being quite naked, with the exception of the few scattered downy tufts before mentioned; when younger the neck is also conspicuously less clad than in *G. fulvus.* From *G. bengalensis* it differs altogether; and it has fourteen *rectrices,* like *G. fulvus,* whereas *G. bengalensis* has twelve only.

5. GYPS BENGALENSIS (Gould's B. As. pt. iii.).

The African species is doubtfully identical (Ibis, 1865, p. 339). It is a little-known fact that the down of this common Indian Vulture is manufactured into powder-puffs and articles of costume, being as delicate as any other sort of down so used. I have seen in Calcutta heaps of flattened Vulture-skins of this species divested of their feathers, in the possession of native artisans, who earn their living by manufacturing articles of down; and little do most persons who use or wear such manufactures suspect the source from which they are derived*.

6. NEOPHRON GINGINIANUS, (Lath.). *N. percnopterus,* Sclat. P.Z.S. 1865, p. 675, *ptm.*

In the Gardens of the Zoological Society there were lately four white Ráchamáhs or Neophrons—one from Africa, and three from India. They were evidently of two distinct specific races. The African (Lev. Ois. d'Afr. t. 14; Vieillot, Gal. des Ois. t. 2; Jard. and Selb. Ill. Orn. pl. 23; Gould's B. Eur. pl. 3) is larger and more robust, the tarsi and toes conspicuously so. The corneous portion of the bill is black, and the ceral portion is of a reddish-yellow, different from the purer yellow of the cheeks; the talons also are black, and the cuneate tail passes the tips of the closed wings by an inch or more. In the three Indian birds the corneous portion of the bill is of a pale yellowish flesh-colour, as are also the talons; the ceral portion of the bill is of the same yellow as the cheeks; the points of the closed wings just reach to the tail-tip; and a conspicuous fold of skin is continued from beneath the ear to the throat underneath, which is little more than indicated in the African example; moreover the throat is quite bare in the Indian species, thinly clad with short white feathers in *N. percnopterus*, and with short black feathers in *N. pileatus*. The last appertains properly to the Ethiopian region (south of the Great Desert), the second to the southern half of the Eastern Atlantic region, and the first to the Indian region. Other African white Ráchamáhs I find to have black bill and claws, but not any Indian; and referring to *Vultur meleagris* of Pallas, I remark that he describes the black-billed race as a scarce bird in the Tauric Chersonesus (Crimea); while the Indian race is that figured in the collection of drawings presented by Mr. Hodgson to the British Museum. This bird appears to be the *Vultur ginginianus* of Latham (Ind. Orn. i. p. 7, and Gen. Hist. B. i. p. 27, pl. 5), founded on the "Vautour de Gingi" of Sonnerat (Voy. Ind. ii. p. 184).

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* Mr. F. Moore, in Horsfield's 'Catalogue of the Museum of the Hon. E. I. Company' (i. p. 2), gives, in a note, a quotation from Dr. F. Buchanan Hamilton's writings respecting "two kinds of Vulture" in Bengal; but he is wrong in supposing that *Vultur calvus* is one of those intended. The species referred to by Dr. B. Hamilton are unquestionably *Gyps indicus* and *G. bengalensis.* Instead of "screaming and hissing" I would rather use the words *inarticulate cackling and snorting*; for these Vultures have no proper voice; and the habit as described does not apply to *G. calvus,* which is not gregarious, and feeds in a more lordly style, the other birds giving way to it.

8. FALCO PEREGRINUS.

Having now examined numerous British specimens, I can perceive in them no difference whatever from the Indian "Bhyri." Professor Schlegel considers the Peregrines from all America (to the Straits of Magellan) as not differing from those of Europe; but "la variété accidentale foncée de l'Australie," *F. melanogenys*, he recognizes as only a variety of *F. peregrinus*, occurring rarely in Java (and there preying on Jungle-fowl), and being probably the true *F. peregrinator* of Sundevall. Now in India (as in North America) *F. peregrinus* is a thorough "Duck-Hawk;" and I should not think it preys often on Jungle-fowl, which are more likely to fall victims to the *Spizaeti* and to *Lophospiza trivirgata*; and the Australian species also is described by Mr. Gould as emphatically a "Duck-Hawk:" but the Indian "Sháhin" (*F. peregrinator*) is much more of a forest-bird, and may now and then regale upon Jungle-fowl*. *F. melanogenys* has always appeared to me to be a good definite species, intermediate in character between the *Bhyri* and *Sháhin*; and I suspect that its habits will likewise prove intermediate. As all of the Australian specimens which I have seen were essentially similar, I do not perceive how the race can be appositely designated an "accidental" variety of *F. peregrinus*. In like manner Professor Schlegel only acknowledges the Australian Hobby (*Hypotriorchis lunulatus*) as *Falco subbuteo frontatus**. (It ranges, as he tells us, to Amboyna and Ceram.) Now two common British birds which are very similar in appearance are universally recognized as good species (*Phylloscopus trochilus* and *P. rufus*), because we happen to be familiar with them, and to know of the difference of their notes and in the colouring of their eggs; but if *P. rufus* were brought as new from a distant region, and we were (as usual) unacquainted with its voice and with its eggs, upon the same principle it should be ranged as *P. trochilus rufus*; and no slight confusion would be introduced if we were to attempt to classify the Asiatic species of *Phylloscopus* and allied forms after this fashion! Alexander Wilson used to be irate at finding so many well-marked North-American species of birds set down as "varieties" (and usually "degenerate" varieties) of European species; and, with considerably increased knowledge, all of those now meet with general acceptation as acknowledged species. I quite hold with Dr. Jerdon in his remarks on species and varieties (Introduction, p. xxv *et seq.*), and think with him that "it is more convenient in practice to give to each [recognized] race a distinct specific name, than to speak of them as Var. A. or Var. B. of such a species," or, again, than to affix a double specific name, according to the system of Professor Schlegel. Indeed I look upon it as essentially a matter of convenience, more especially with regard to the views respecting species and varieties which have been propounded by Messrs. Darwin and Wallace.

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* In his account of *F. jugger*, Dr. Jerdon truly remarks:—"While the Bhyri prefers the sea-coast and the neighbourhood of lakes, rivers, and wet cultivation, and the Sháhin delights in hilly and wooded regions, the Lággur, on the contrary, frequents open dry plains and the vicinity of cultivation" (B. Ind. i. p. 31).

9. Falco peregrinator†, Sundevall. (The *Sháhin.*) *F. ruber*,

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* Mr. Gould, in his recent 'Handbook to the Birds of Australia,' remarks that it "combines in its structure characters pertaining to the Hobby and to the Merlin of Europe," and moreover that it is a "stationary" or non-migratory species in all of the colonies which he visited. In structure it is decidedly a true Hobby, as distinguished from the Merlin group.

† [Mr. J. H. Gurney has called our attention to the fact that an adult female, attributed to this species, in the British Museum, believed to be

Schlegel; *F. ruber indicus,* Aldrovandi; *F. communis indicus,* Gm.; *F. shahin,* Jerdon; *F. sultaneus,* Hodgson*.

I have only seen Indian specimens of this Falcon, though it doubtless occurs in the Indo-Chinese province, if not also in the Malayan. Mr. Layard obtained it in Ceylon.

10. Falco sacer.

This is perhaps the doubtfully cited *F. biarmicus* of Vigne's list, noticed as being "common in the plains under the Alpine Punjab" (P. Z. S. 1841, p. 6)—unless, indeed, the common *F. jugger* be intended, or, more probably, *F. babylonicus.*

11. Falco jugger.

It is remarkable that this very common Indian Falcon has not hitherto been noted from the low northern half of Ceylon. The young have pale lead-coloured tarsi and toes—not yellow, as represented in Gould's figure (B. As. pt. i.). There is a living adult at present in the Zoological Gardens†.

12. Falco babylonicus, Gurney, Ibis, 1861, p. 218. "*F. peregrinoides,*" Hodgson, J. A. S. B. xxiv. 574; G. R. Gray, B. M. Catal. B. Nipal, 1st edit. p. 44 ("Red-naped Falcon").

In his second edition of the catalogue in question, Mr. Gray

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from Nepâl, and an adult male in the Norwich Museum from Northern India, have a much lighter colouring on the underparts than has hitherto been figured or described as being the case in *F. peregrinator.* If it be not that this peculiarity is due to old age, Mr. Gurney supposes the two specimens just mentioned may belong to an undescribed species.—Ed.]

* Undoubtedly the true *F. sultaneus,* H., though a figure in one of his drawings represents, I suspect, a stray individual of the Australian *F. melanogenys*; and such, also, may be Dr. Jerdon's supposed hybrid Falcon (p. 26).

† The *F. subniger,* Gray (Gould's 'Birds of Australia,' i. pl. ix.), appears to me to be decidedly one of the Sákir and Lanner group in immature plumage; and *F. hypoleucus,* Gould (B. Austr. pl. vii.), I greatly suspect to be no other than the adult of the same species. Professor Schlegel, I find, has expressed the same opinion. I also suspect, with Dr. Jerdon, that *Ieracidea occidentalis,* Gould, is merely the adult phase of *I. berigora* (B. Austr. i. pl. vii.–ix.). Since writing the foregoing remarks, I have seen Mr. Gould's useful 'Handbook of the Birds of Australia,' wherein he retains alike *Falco hypoleucus* and *F. subniger, Ieracidea berigora* and *I. occidentalis*; but I am not satisfied that he does so correctly.

identifies *F. peregrinoides* of Hodgson with *F. peregrinus*! Mr. Hodgson was of course familiar with the common *Bhyri* of Indian falconry, and would therefore at once discriminate *F. babylonicus* as a separate species. There is a fine specimen of an adult female (as adjudged) of this rare Falcon in the Worcester Museum, alleged to be from Java, which must needs be a mistake. Its general colouring is very pallid; but I would refer the species to the Peregrine subgroup, rather than to that of the Sákir and Lanner. The specimen in the Worcester Museum is like an adult female Peregrine, only much paler, with all the markings considerably less developed; nape light cinnamon-rufous marked with dusky; the moustachial streak small; the feathers of the upper parts cross-banded as in adult Peregrines. A recent communication from Dr. Jerdon proves that *Falco babylonicus* is not uncommon in Kashmir (*vide anteà*, p. 221).

13 and 14. HYPOTRIORCHIS SUBBUTEO and H. SEVERUS.

The crepuscular habit of the birds of this division has now been noticed in *H. eleonoræ* (Ibis, 1865, p. 333)*. *H. severus*† bears just that relationship to *H. subbuteo* which *Hirundo cahirica* bears to *H. rustica*, and *H. hyperythra* (of Ceylon) to *H. erythropygia* (Sykes, which is distinct from *H. daurica*). In all of these cases the deeper-coloured bird is less migratory, or even permanently resident. The Rufous-bellied Hobby has not been observed northward of the Himálaya, nor *Hirundo hyperythra* out of Ceylon; and while neither *H. rustica* nor *H. rufula* winters in Palestine, Mr. Tristram remarks of *H. cahirica* that "a few remain on the sea-coast and in the Ghor all winter" (P. Z. S. 1864, p. 443). Indeed, it would appear that he observed them in considerable numbers during the winter months ('Land of Israel,' pp. 105, 118). It may be added that *Falco peregrinator* stands in the same relationship to *F. peregrinus*, and is likewise a more subtropical species, with a comparatively limited range of distribution. Compare also the African *Tinnunculus rupicolus* with *T. alaudarius*, and *Athene castanotus* of Ceylon with *A. radiatus*.

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* For the distinctions between *H. concolor* (*verus*) and *Lithofalco ardesiacus*, see MM. J. Verreaux and O. des Murs in Rev. Zool. 1862, p. 177.

† [Mr. Gurney considers the nearest ally of *H. severus* to be *H. cuvieri* (A. Smith) from Western and Southern Africa, with which he regards *Falco bosschii*, Schlegel (N. T. D. vol. i. p. 123, pl. 5), as identical.—ED.]

15. LITHOFALCO ÆSALON.

"Peking, Amoy, and Foochow" (Swinhoe, P. Z. S. 1863, p. 260). In 'Ibis,' 1864, p. 418, Mr. Swinhoe records having noticed a pair of Merlins at sea, on the voyage from Bombay to Galle! (Were these satisfactorily identified?) Capt. T. Hutton remarks that the Merlin occurs at Kandahar (Journ. As. Soc. B. xvi. p. 775).

17. TINNUNCULUS ALAUDARIUS.

There is a Tenasserim (Siamese province) Kestrel to which attention should be directed—*T. saturatus*, Blyth (J. A. S. B. xxviii. p. 277). An adult female received from Yé is noticed in my 'Catalogue' of the Birds in the Calcutta Museum (No. 69) as "perhaps the female of a distinct race, remarkable for the great development of the black markings of its plumage." A young female of the same race was subsequently obtained, in which the cap is fuscous, with scarcely an indication of rufous margining the feathers, the fuscous colour also *predominating over the rufous* upon the whole upper plumage; and on the tail *the rufous bands are narrower than the black bands.* An adult male Kestrel, from the vicinity of Moulmein (though rather deeper-coloured than usual), differed in no respect from the common *T. alaudarius*; but it might well have been a stray individual of the latter, which is common in the adjacent Peguan province of the Indo-Chinese subregion; or perhaps, though less probably, the adult male of *T. saturatus* may prove to be less strongly distinguished, as is indeed exemplified by *T. japonicus* (Faun. Japon. tab 1 & 1 *b*). *T. saturatus* is quite distinct from *T. moluccensis* (Hombr. et Jacq. 'Voyage au Pôle Sud,' Ois., tab. 1 & 2).

19. ERYTHROPUS VESPERTINUS*.

The rufous plumage of the adult female of this species was unknown to Dr. Jerdon. In the 'Annals of Natural History' for

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* [It would be very desirable to ascertain whether examples of the so-called *E. vespertinus* from India are to be referred to the western form of Red-footed Falcon or to the eastern, with the light-coloured under surface to the wings, *E. amurensis*. *Vide suprà*, p. 119.—ED.]

1841 (vol. iv. 213), this bird, under the name of *Falco rufipes**, is asserted to be "the most common Hawk in Asia Minor, building its nests under the roofs, and sometimes even in the interior of houses." In confinement this species and *E. cenchris* do not thrive upon meat, but must be fed *on a mixed diet,* like that commonly given to small insectivorous birds. Dr. Jerdon, it will be observed, agrees with me in referring *E. cenchris* and *E. vespertinus* to the same minimum division. I cannot help thinking that all naturalists who are familiar with the living birds must needs be of the same opinion. These two little white-clawed Kestrelets only visit Lower Bengal during the rainy season (so far as I have observed); and the same remark applies to *Baza lophotes.*

20. HIERAX EUTOLMUS.

The common Malayan species of this genus, *H. fringillarius,* Drapiez (*H. malayensis,* Strickland, and *Falco cærulescens,* Vieillot, Gal. des Ois. t. 18), is stated by Vieillot to be found "particulièrement en Bengale," where this genus happens to have no representative! An account of its habits (which of course are *generic*) is given in the 'Proceedings of the Zoological Society' for 1863, p. 206. The notice in Captain Mundy's 'Sketches of a Tour in India' (ii. p. 25), formerly quoted by me and since by Mr. F. Moore (P. Z. S. 1854, p. 258), refers unquestionably to *Accipiter virgatus,* and not to a *Hierax,* as indeed is remarked by Dr. Jerdon.

The *Khandesra* Hawk noticed by Dr. Jerdon (p. 54) is probably, as he suggests, *Accipiter nisoides,* nobis (J. A. S. B. 1845, xvi. 727, xxi. 359; ex Sumatrâ *A. fringillarius* var., Vigors, 'Appendix to Memoir of Sir T. S. Raffles,' p. 549; and *A. gularis,* Schlegel, Faun. Japon. *Aves,* 1850, t. 2). Professor Schlegel mentions a specimen of his *Nisus gularis* from Nipâl! Dr. Jerdon writes word that *A. nisoides* is not rare in the interior of the Himálaya; but two examples received from him, possibly intended for this (though I can hardly comprehend his making such a mistake), are decidedly *A. virgatus**. In the Report on Japanese Ornithology accompanying the narrative of Commodore Perry's Expedition, it is stated of *A. gularis* that "The young bird is darker above than represented in the figure of the adult male in the plate in 'Fauna Japonica,' and has the transverse bars on the underparts much less regular and lighter-coloured than in the figure of the female in the same plate." I have little doubt of there being some misapprehension regarding the alleged occurrence of *Micronisus soloensis* ("*Nisus minutus*, Lesson," Pucheran, Rev. Zool. 1850, p. 200) on the Coromandel coast, for I have never seen it even from the Malayan peninsula. Professor Schlegel gives it from Java, Celebes, the Philippines, and China.

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* [We cannot help thinking that in the passage quoted there *may* have been some confusion between this species and *Tinnunculus cenchris. Confer* 'Ibis,' 1860, pp. 380, 381.—ED.]

26. AQUILA CHRYSAETUS.

The great *Berkut* or *Bjurkut* Eagle of Mongolia referred to is, I suspect, a much larger and more powerful bird than *A. chrysaetus*, to judge only from the feats credibly reported of it by Atkinson† and others, even as *Haliaetus pelagicus* and the great Tibetan Raven are considerably more powerful birds than *H. albicilla* and *Corvus corax*. I saw such an Eagle on board an American vessel in Calcutta, wherein it had been brought from California, and have seen no other that even approached it in magnitude. So magnificent an Eagle could have been no other than the redoubtable *Berkut*! Its colour was unusually dark, or at least more so than I have ever remarked the hue of *A. chrysaetus.*

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* My original description of *A. nisoides* may here be quoted:—"Presumed female in mature plumage, differing only from that of *A. nisus* in its much inferior size, being smaller than the male of *A. nisus*, and in having the throat streakless white, excepting a narrow median dark line; the usual lateral lines occur, but not conspicuously, which are observable in various species of Hawks, Eagle-Hawks, &c. Length of wing 7¼ in.; of tail 5½ in.; tarsi 1¾ in.; middle toe and claw 1½ in." I have seen three nearly similar specimens of this Sparrow-Hawk, all received from Malacca, and it is much more closely akin to *A. nisus* than is *A. virgatus*. No trace of ferruginous colouring underneath was observable in any one of the three. They were of the size of the male *A. nisus*, or somewhat smaller, with the plumage of a non-rufous adult female of that species, combined with the trilineated throat of *A. virgatus*, the affinity, I repeat, being much closer to the former species than to the latter. When writing the foregoing remarks I had not the 'Fauna Japonica' at hand. Now that it is before me, I recognize in the figure of the female *A. gularis* an exact representation of my *A. nisoides*.

† Travels in Oriental and Western Siberia, p. 493. Pennant (Arctic Zoology, ii. p. 195) mentions Eagles being trained by the Tartars to attack Wolves!

29. AQUILA FULVESCENS.

This species is united with the African *A. nævioides* by Mr. G. R. Gray (B. M. Cat. B. Nepal, 2nd edit.); but it is a considerably smaller bird, and varies much more in its colouring. I have had many alive, three or four of them together, but never saw any approaching the size of the three fine specimens of *A. nævioides* at present in the Zoological Gardens.

30. AQUILA HASTATA.

This species is well figured by Mr. Hodgson, as I pointed out to Mr. G. R. Gray, who does not include it in the second edition of his catalogue of that gentleman's collection. I have had many fresh specimens of all ages, and could always easily distinguish it from *A. clanga.* Though nearly of the same linear dimensions, it is considerably less robust, with smaller bill and feet, and there is a recognizable difference in the plumage in all its phases, while in its habits it partakes (in a prominent degree) of the nest-plundering propensities of *Neopus malaiensis.*

31. HIERAETUS PENNATUS.

This species occurs also in the Indo-Chinese subregion. Mr. Gould still regards it as distinct from the Australian *H. morphnoides* (Handb. B. Austr. i. p. 12). A rudimentary occipital crest always observable in Indian specimens.

33. EUTOLMAETUS BONELLII.

I have no knowledge of this bird ever occurring in Lower Bengal.

37. SPIZAETUS KIENERI.

With respect to *S. caligatus* and *S. alboniger,* mentioned under this head, see Mr. Gurney's enumeration of the species of this genus (for which he accepts the name *Spizaetus*) accompanying Mr. Gould's figure (Birds of Asia, part xvi.) of *S. alboniger* (*S. borneonensis,* Gray), I have to remark that the species common in Lower Bengal (and there the only one) is *S. limnaetus* (*Falco caligatus* of Raffles), identical with the common Malayan race, similarly assuming the black plumage with full maturity, and very rarely exhibiting more than the rudiment of an occipital crest, as distinguished from *S. cirrhatus* of other parts of India and of Ceylon. The latter never attains the black plumage, and has always a long occipital crest. Horsfield's type-specimen of his *Falco limnaetus* from Java is identical with the Bengal bird; but Professor Schlegel (Mus. P.-B. *Astures*, pp. 10, 11) describes a long-crested specimen from Western Java which seems to agree with *S. cirrhatus* of India, while his other Javan specimens are clearly *S. limnaetus*. Even the large and very conspicuously distinguished *S. nipalensis*, Hodgson, is considered by Professor Schlegel to be merely a variety of his *S. cirrhatus*. Yet he discriminates *Spilornis cheela* from *S. bacha*, which most assuredly are less strongly characterized apart than are *Spizaetus nipalensis* and *S. cirrhatus*. *S. nipalensis* should occur rarely in the mountainous parts of Southern India, as it was obtained by the late Dr. Kelaart at an altitude of about 4000 feet in Ceylon. Professor Schlegel notes *S. kieneri* from the Philippines. It may be remarked that the black final plumage of *S. limnaetus* is analogous to that of the North-American *Archibuteo sancti-johannis*, if not also to that of *Astur melanoleucus*, A. Smith (Zool. S. Africa, *Aves*, pl. 18); but see Mr. Gurney's remarks ('Ibis,' 1864, p. 357).

39. SPILORNIS CHEELA.

There are several specific races of this type of *Circaetine* birds:—

(1.) *S. cheela* (Lath.), *Hæmatornis undulatus*, Vigors, which will probably be found to extend, in all suitable localities, throughout the Indo-Chinese subregion. To the westward it abounds in Lower Bengal and along the *Tarai* at the foot of the Himálaya*. Professor Schlegel notes it from China†.

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* The true *Circaeti* frequent dry open country, where they prey chiefly on snakes and lizards. The species of *Spilornis* are found more about wet places, where they subsist mainly on large frogs (which they clutch in the mud) and on the more or less aquatic snakes (as the *Tropidonoti* and *Homolopsides*); hence their feet are almost always more or less clotted with sediment, which may render them frequent agents for transporting to a distance the germs of aquatic organisms.

† [Mr. Gurney informs us that *S. orientalis*, obtained by Mr. Swinhoe

(2.) *S. spilogaster*, nobis (J. A. S. B. xxi. p. 353), *Hæmatornis elgini*, Tytler (J. A. S. B. xxxii. p. 87), from the Andamán Islands, where it occurs together with the preceding; also *H. bacha* of Colonel Sykes's list of the birds of the Dukhun (P. Z. S. 1832, p. 79), as identified from a specimen in the India Museum presented by Colonel Sykes, being doubtless that referred to (*loc. cit.*). This well-marked race inhabits the Indian peninsula and Ceylon, and also the Andamáns, from which last-named locality a fine pair are now living in the Zoological Gardens. It is a smaller bird and not so handsome as *S. cheela*, with less developed crest and much less of black upon the crown, the tail-markings quite different, having the black subterminal band conspicuously much less broad. Some individuals may very probably show considerable similarity to the Malayan *S. bacha*, which would account for Professor Schlegel identifying a Cinghalese specimen with the Malayan bird; still the tail-bands should be differently placed *.

(3.) *S. bacha* (Daudin), *Falco bido*, Horsfield, which I suspect to be peculiar to the Malayan subregion. It is again smaller, with a darker shade of colouring, and fewer spots.

(4.) *S. rufipectus*, Gould (P. Z. S. 1857, p. 222), *Circaetus bacha celebensis*, Schlegel, from Celebes.

(5.) *S. holospilus* (Vigors), Gray and Mitchell (Gen. Birds, pl. 7), from the Philippines and South China.

S. SPILOGASTER has accordingly to be added to the fauna of the Indian subregion.

41. POLIOAETUS ICHTHYAETUS.

Young (in abraded plumage) figured as *Haliaetus lineatus* by Dr. Gray, in his 'Illustrations of Indian Zoology,' from General Hardwicke's drawing. This figure has been erroneously assigned to *Milvus govinda*; but the present genus has the same

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in Formosa, appears to be identical with *S. cheela*, and that specimens from that island and from Northern India are rather larger than those from Southern India, Siam, and the Malay peninsula.—ED.]

* [We learn from Mr. Gurney that he has never seen an Indian example of this bird, but that specimens from Ceylon and the Andamáns appear to be absolutely identical with *S. bacha* (*Falco bido*, Horsf.) from Java, Sumatra, Borneo, and Singapore.—ED.]

speckled immature plumage as the Pariá and Bráhmini Kites of India. *Pandion humilis,* S. Müller (*Ichthyaetus nanus,* Blyth), is, I feel quite confident, erroneously assigned to Bengal by Professor Schlegel (Mus. P.-B. *Aquilæ,* p. 18). The specimen which I described as *Ichthyaetus nanus* was from the Straits of Malacca. Mr. F. Moore also gives a specimen from Bengal with a note of doubt. Not improbably the range of *P. humilis* may extend to Lower Siam and the southern Tenasserim provinces, but I doubt if it reaches higher.

42. HALIAETUS LEUCORYPHUS; *Aquila leucorypha,* Pallas; *H. fulviventer,* Vieillot; *H. macei,* Cuvier.

Professor Schlegel, I have no doubt correctly, identifies the Indian bird with that described by Pallas.

44. BUTEO VULGARIS.

This certainly occurs in the North-western Himálaya, as near Másuri, where several specimens were collected by Dr. T. Stewart. *B. rufiventris* (Jerdon), from the Nilgiris, and also Nipâl, is identified by Mr. Gurney (Ibis, 1862, p. 361) with "*B. cirtensis* of Le Vaillant, jun., the northern representative of *B. tachardus*" (as noticed in Jerdon's Appendix), which is referred to *B. tachardus* by Dr. Bree. M. des Murs, however, has shown (Rev. Zool. 1862, p. 49) that the "Tachard" of Le Vaillant, and consequently the *B. tachardus* of Daudin, is identical with *Pernis apivorus,*—an opinion in which Mr. Gurney coincides (Ibis, 1862, p. 361). At all events, Jerdon's name *rufiventris* takes precedence of *cirtensis* *.

45. BUTEO FEROX; *Falco ferox,* Gmelin; *B. rufinus,* Rüppell; *B. canescens,* Hodgson; *B. leucurus,* Naumann.

46. BUTEO ASIATICUS; *Falco asiaticus,* Latham; *Buteo aquilinus* and *Butaquila leucocephala,* Hodgson; *B. hemilasius,* Schlegel (Faun. Japon. *Aves,* tab. 7), as suggested by Mr. G. R. Gray in his catalogue of Mr. Hodgson's specimens presented to the British Museum (1846). In his second edition of

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* [Mr. Gurney considers that there is no specific difference between *Buteo desertorum* (Daudin) from South Africa, *B. cirtensis* (Le Vaill., jun.) from North Africa, and *B. rufiventris* (Jerdon) from India. If so, of course Daudin's name has the priority.—ED.]

that catalogue (1863), however, Mr. Gray unites *B. leucocephala* with *B. ferox,* and *B. aquilinus* with *Archibuteo strophiatus,* Hodgson, the latter being decidedly identical with *Hieraetus pennatus* ! The specimen which I described as *aquilinus* (J. A. S. B. xvi. p. 176) was sent by Mr. Hodgson as his *Butaquila leucocephala* ; but as it had not a sign of white about the head, I suggested to that gentleman the better name *aquilinus* from its robust form. Either this or *B. plumipes* can hardly be other than *Falco asiaticus* of Latham. His description on the whole applies better to the former, while the " half-feathered legs (*pedibus semilanatis*)" preclude its identification with *B. ferox.* Both this species and the next have the tarsi feathered halfway down ; while in *Archibuteo hemiptilopus* (no. 49) the tarsi are plumed to the toes in front and externally, and are bare and scutellated behind. I suspect that both *B. asiaticus* and *A. hemiptilopus* inhabit chiefly the Mongolian region, and should be considered stragglers anywhere away from it.

47. BUTEO PLUMIPES, Hodgson ; *B. japonicus,* Schlegel (Faun. Japon. *Aves,* tab. vi. and vii. *b*).

Mr. Hodgson's specimen in the British Museum is certainly of a uniform dark brown ; but most Buzzards vary exceedingly in colour, and I see no reason why *B. japonicus* should not be identified with *B. plumipes,* notwithstanding that Mr. Swinhoe expressly asserts that the former " never acquires the dark plumage of the adult " of *B. vulgaris* (P. Z. S. 1863, p. 260). Only that one specimen was procured by Mr. Hodgson ; so that undoubtedly it must be considered an exceedingly rare straggler within the area of his researches. My *B. pygmæus* (J. A. S. B. xiv. p. 217), which Dr. Jerdon thought was not unlikely to prove identical with *plumipes,* is the same as *Poliornis poliogenys* (*Falco poliogenys,* Temm. Pl. Col. 235 ; Faun. Japon. *Aves,* tab. vii. *b,* where it is designated *Buteo pyrrhogenys, lapsu calami,* as also in Jerdon's Appendix). An interesting notice of this species is given in the Ornithological Report accompanying the narrative of Commodore Perry's Exploring Expedition to the China Seas and Japan. As many as four of the *Falconidæ* figured in the ' Fauna Japonica ' (as I identify them) thus straggle far westward, viz. *Accipiter nisoides* (*gularis*), *Buteo asiaticus* (*hemilasius*), *B. plumipes* (*japonicus*), and *Poliornis poliogenys* (v. *pygmæus*, nobis). The last was originally described by Temminck from the Philippines, where it was subsequently obtained by the late Hugh Cuming; and a single specimen was procured by the late Dr. Helfer somewhere in the Tenasserim provinces, which I described as *Buteo pygmæus* in 1845. Mr. Swinhoe has noticed a crested example from Formosa ('Ibis,' 1864, p. 429).

53. CIRCUS MELANOLEUCUS.

"Procured by Mr. Fleming, R.A., at Tientsin. Probably extends throughout the interior of China" (Swinhoe, P. Z. S. 1863, p. 261); Upper and Middle Amuria (Gustav Radde, 'Reisen, &c.' ii. p. 9, and taf. ii. fig. 1); also Afghánistân. Dr. Jerdon remarks (in his Appendix) that "this Harrier, I have every reason to believe, breeds in Northern India. I saw several in Purneeah in July, some of them in a garb resembling that of the females of the other species, and shot one bird in a state of change from the female garb to the black and white ordinary plumage. This was apparently not a young bird of the year, for the tail-feathers were much worn. Can this bird, then, have a double moult? It would appear so, unless I was mistaken in considering it not a bird of the year. If so, they have the ordinary female garb of Harriers at first, and shortly afterwards assume the peculiar pied livery of this species." In no diurnal bird of prey known to me are the nestling-feathers shed during the first year; and they are commonly much abraded when cast. In the Owls, on the contrary, with the exception of the genus *Strix* (or particular subfamily *Striginæ*), the short and flimsy nestling-garb, inclusive of the primaries and rectrices, is moulted soon after leaving the nest. Unfortunately Dr. Jerdon does not describe the first plumage of *Circus melanoleucus*, noting the distinctions by which it may be known from that of other species.

55. HALIASTUR INDUS.

According to Professor Schlegel, this species is spread from Nipâl to the Philippines and Australia. The *H. girrenera* (Vieillot, Gal. des Ois. pl. 10; *H. leucosternus*, Gould, B.

Austr. i. pl. 4), he remarks, is founded (*leucosternus* at least) on the absence of the black median stripes on the feathers of the white portion of the plumage, a character "purely accidental," as also in *H. vocifer*. This view is irreconcileable with the fact that these marks are invariably strongly developed in the Indian race, and are never seen in the Australian race; while in the Javan race (extending to Siam) they are present but only slightly developed, the white feathers being merely black-shafted. Specimens from Bouru, Gilolo, and Aru are of the true Australian race, without even the shafts of the white feathers black and contrasting. Three Indian specimens and a Javan one were lately to be seen together in the Gardens of the Zoological Society, the difference between them being very conspicuous. Of the immense number which I have examined or beheld close in India, I certainly never saw even one resembling or approximating to the Javanese bird. Upon one occasion I remember witnessing an extraordinary assemblage of "Brahmini Kites," collected to watch the dragging of the moat which surrounds the old fort at Budge-budge (on the bank of the Hugli below Calcutta). There were many hundreds of them, perched so close together on the surrounding trees that it appeared as if the branches would give way with the weight of them.

The intermediate Javan race (*H. intermedius*, 'Ibis,' 1865, p. 28), is possibly the result of intermixture; and it may be that there is a greater or less development of the black streaks in the Malayan province according to the proportions of that intermixture, constituting a gradation or transition from the Indian race to the Australian, as in some other instances where conterminous races blend; and this would lead observers in that particular zoological province to suppose the absence or amount of development of the streaks to be "purely accidental." The near affinity of the fine large African *Haliastur vocifer* to the "Brahmini Kite," noticed by Professor Schlegel, struck me immediately on beholding the pair of the former now living in the Zoological Gardens; but the voice is very different—that of *H. indus* being a peculiar sort of *bleat*, quite unlike the shrill cries of most *Falconidæ* and the barking notes of others. *H. sphenurus*, Gould, bears a similar affinity to *Blagrus leucogaster*.

56. Milvus govinda.

Professor Schlegel (Mus. P.-B. *Milvi*, p. 2) identifies this with the *M. melanotis*, Schlegel (Faun. Japon. *Aves*, tab. v. and v. b), of China and Japan *. Of the myriads of Indian Kites which have been familiarly observed by me for more than twenty-one years, I certainly never saw one even approaching to the rufous colouring represented in the 'Fauna Japonica' (tab. v. b); and, so far as I have seen, the adults of *M. melanotis* exhibit a mottling of the feathers of the upper parts, as shown in the figures cited, which is never seen in adults of the Indian Kite. The Chinese species has, moreover, a rather stouter bill. In former years I held this opinion in opposition to that of my friend Mr. Swinhoe (*in epistolis*); but I observe that he now gives *melanotis* (and not *govinda*) in his "Catalogue of the Birds of China" (P. Z. S. 1863, p. 260) †. Mr. Gould, in his recently published 'Handbook to the Birds of Australia,' states of *M. affinis* that it "appears to enjoy a very wide distribution, since it not only inhabits Australia, but appears to extend its range through the [so-called] Indian Islands to the peninsula of India. Mr. Gurney informs us that it occurs in Macassar, and certainly in India as far north as Nepaul, though it is generally confounded in the latter country with its larger relative *M. govinda*." In every assemblage of Indian Kites there is much disparity of size, some males being considerably smaller than the largest females; and the former would seem to be undistinguishable from the Australian *affinis*; but I am not disposed to accept the opinion that there are two separable races of *Milvus* in the Indian and Indo-Chinese subregions. In Mr. Gould's representation of the common Pariá Kite of India (B. As. pl. iv.), the cere and feet should have been coloured of a much paler or dull light sulphur-yellow, or what might rather be termed dull yellowish white; while the dark iris is correct, and conspicuously distinguishes both this species and *M. melanotis* when alive from *M. migrans*, as may now be seen in the Zoological Gardens. When I was in the habit of continually seeing the Indian Kite in the utmost profusion, and commonly near enough to permit of the closest observation, the error here noticed of colouring the cere and feet of much too deep a yellow was strikingly apparent. It is amusing to stand at a window in a neighbourhood where these birds and the Crows (*Corvus splendens*) abound, and there to make movements of the arm as if throwing something away: both Kites and Crows are immediately attracted and gather round, and will sweep by and hover about close, watching eagerly for what they suppose is being cast out to them. Colonel Tytler has given a good account of an assemblage of Kites and Crows preying on the winged *Termites*, as they issue forth in a jet, which at a little distance might be mistaken for a continuous exhalation of smoke or vapour; and a curious sight it is to behold them thus streaming forth in myriads (Ann. & Mag. N.H. 1854, xiv. p. 171). On occasions of this sort various other species intermingle, Drongos (*Dicrurus*), Mainas (*Acridotheres*), and insectivorous Bats. Every predatory creature will devour eagerly the winged "White Ants"*.

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* "Fait entendre une espèce de chant assez agréable"! (G. Schlegel as quoted). The Indian species has a loud and shrill tremulous squeal, whence its native name of *Chil* (pronounced *Cheel*), which has been transferred by some mistake to *Spilornis cheela*, as the native name *Shikra* is in like manner transferred from *Nisastur badius* to *Lithofalco chiquera*.

† There is a specimen of *M. melanotis* in the Zoological Gardens, which, though not labelled as such, is doubtless the individual really received from China, rather than an example of undoubted *M. migrans* which is so ticketed. From the latter it is easily distinguishable by its dark iris.

58. BAZA LOPHOTES.

Professor Schlegel notes this species from Malacca, whence I also have repeatedly seen it. It occurs rarely in Ceylon.

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* It is well known how the winged *Termites* are attracted by a light, or by a white table-cloth. Upon occasions of their thus swarming into a room, my caged small insectivorous birds used to enjoy a grand treat. I had them in large cages with wire all round; and placing these on the floor in a circle, with a light in the centre, plenty of *Termites* would enter the cages to pass through them towards the light, and would keep their inmates incessantly occupied, till they could manage to get down no more of them. In the course of a quarter of an hour or thereabouts, after their first appearance, every *Termes* will be found to have shed its wings, and, crawling about, scarcely one escapes falling a prey to small Geckos and other enemies.

60. STRIX INDICA, nobis, n. sp.

Syn. *S. javanica,* Jerdon, B. Ind. i. p. 117; *S. flammea,* Gould, P. Z. S. 1859, p. 151 (ex Siam)?

Prof. Schlegel (Mus. P.-B. *Striges,* p. 4) unites *S. javanica* with *S. flammea,* and remarks of "individus des Indes orientales" that "Il paraît que leur taille est tant soit peu moins forte que dans ceux de l'Europe et que le bas de leur tarses est un peu moins emplumé." The late Hugh Strickland identified Horsfield's type Javan specimen with *S. candida*; and the species which is figured by Gray and Mitchell (Gen. Birds, pl. 15) is considerably more akin to *S. candida* than it is to *S. flammea,* and again still less so to *S. indica* (which I now distinguish) of the Indian and Indo-Chinese subregions. The latter, as Dr. Jerdon remarks, as compared with *S. flammea,* "differs by being larger, with more robust feet and toes, and in being more spotted beneath." The last character, however, is by no means of constant occurrence. At a time when I erroneously supposed the Indian Screech-Owl to be identical with the European, I at once discriminated a specimen of the latter (from an unknown locality—Egypt, as I afterwards learned) and placed it as a separate species (no. 172) of my Catalogue of the Birds in the Asiatic Society's Museum, Calcutta (1849). Subsequently I named it *S. pusilla* (J.A.S.B. xviii. p. 801), and was not a little surprised when it proved to be the real *S. flammea.* The distinction I have ever since found to be constant; and the difference of the two races is so very conspicuously apparent, upon comparison of specimens, that I cannot understand Prof. Schlegel identifying a Nipâlese example (presented by Mr. Hodgson) with his Javan race. They belong even to different sections of *Striginæ,* with much difference of habit—*S. indica* ranking with *S. flammea* in *Strix* proper, and *S. javanica* in *Scelostrix* of Kaup, together with *S. candida* and *S. capensis.* Prof. Kaup considers the Australian *S. delicatula,* Gould (B. Austr. i. pl. 31), to be identical with *S. javanica* (*vera*); remarking, "I cannot find any difference between the examples of this species from Australia and those from Java[?], and I feel quite sure that *S. delicatula* and *S. javanica* belong to one and the same species" (Trans. Zool. Soc. iv. p. 247). Mr. Cassin, in his 'Catalogue of *Strigidæ,*' keeps *S. de-*

licatula apart from *S. javanica* (Proc. Acad. Nat. Sc. Phil. 1849); but then all his specimens were Indian, and of course *S. indica*: yet he cites the beautiful and correct figure of *S. javanica*, published by Messrs. Gray and Mitchell, as representing his supposed *S. javanica*. Finally Mr. Gould, in his 'Handbook to the Birds of Australia,' retains *S. delicatula*, but refers to *S. javanica* "of India" (i. e. *S. indica*), and not to the true *S. javanica* of the Malayan subregion. Numerous specimens of *S. delicatula* in the British Museum seem to make a very close approach to *S. indica*, and not to *S. javanica*, which latter is a small *Scelostrix* (as distinguished from *Strix*), with white bill and claws like the Indian *Neophron*. *S. affinis*, nobis (Ibis, 1862, p. 388), from South Africa, proves to be *S. poensis*, Fraser. Mr. Wallace has a fine true *Strix* from Macassar which is still more robust than *S. indica*, and closely approximates *S. personata* of Australia (Gould's B. Austr. i. p. 29).

61. SCELOSTRIX CANDIDA.

I never obtained this bird in Lower Bengal; but I remember that the late Professor Wallich had a coloured drawing of one that, as I understood from him, had been killed in the Calcutta Botanic Garden; and Mr. F. Moore's supposed *S. capensis*, represented in one of Buchanan Hamilton's drawings, refers, as a matter of course, to this species. In the 'Ibis' (1865, p. 30) I mentioned that I found *S. candida* among the Philippine specimens in the Derby Museum of Liverpool, two very fine examples (collected by the late Hugh Cuming); but since I have come to understand the differences of the kindred species, I feel that I should like to reexamine the Philippine bird, which is likely to prove another distinguishable species, however close to *S. candida*, and the more so as the latter would otherwise appear to be one of the peculiar species of the Indian subregion*.

62. PHODILUS BADIUS.

Prof. Schlegel refers this species to his *Ulula* as distinguished from *Strix*; and upon examination of the external ear and other characters, I find that it has no claim to belong to the Screech-Owl subfamily (*Striginæ*), but is distinctly one of the Hooters (*Syrniinæ*). Messrs. Mottley and Dillwyn remark that "it has only a single note, frequently repeated, and which is much like the first note of the common Wood-Owl's cry." I observe that a specimen from "India," that had formed part of the collection of my late friend Major Boyes, is noted in Mr. Cassin's 'Catalogue of the *Strigidæ* in the Philadelphia Museum:' this puzzled me for awhile, as indicating a more north-western range for this species than I could quite understand (knowing where Boyes collected personally); but I have lately seen several Tenasserim specimens received from Major Boyes, which sufficiently explains how he came by a *Phodilus badius*.

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* The species of *Scelostrix* are distinguished by their long and slender tarsi, which are not feathered on the lower half. They are ground-birds, which conceal themselves in long grass during the day, and affect the open country away from human habitations—habits considerably diverse from those of the birds which constitute the genus *Strix* as here limited.

64. BULACA NEWARENSIS.

This species is figured by Gray and Mitchell (Gen. Birds, pl. 14) with yellow irides, which is a mistake. The species of *Bulaca*, as of *Syrnium*, have dark irides, while those of *Ptynx* (I suspect) have yellow irides. In the great series of Scops-Owls there are two groups, one having dark and the other yellow irides. To the former belong certain African species of considerable size, as the so-called *Bubo lacteus* (Temm. P. C. 4), also *B. poensis*, Fraser (figured in incompletely mature plumage as *B. fasciolatus*, Temm., in P. Z. S. 1863, pl. 33), and another beautiful species, *B. cinerascens*, now, together with *B. poensis*, in the Zoological Gardens, which seem to differ only from *Bulaca* (founded on the present species) in having tufts of peculiar and rather flimsy texture, which they have a peculiar mode of displaying, spreading them out laterally like the opening of a wing; and to this group of Scops-Owls also belongs the *Ephialtes lettia* and its immediate congeners (as noticed in the sequel). A parallel series of yellow-eyed Scops-Owls comprises the so-called *Bubo africanus* and species akin to it, as also the small European Scops-Owl with others allied to it. Professor Schlegel and also Mr. G. R. Gray erroneously identify *Bulaca newarensis* of Hodgson with *B. indrani* of Sykes (*B. monticola*, Jerdon),—the Himalayan species being very much larger than the other, and differing more from it than

Spilornis cheela does from *S. bacha*. As Dr. Jerdon remarks, the Himalayan bird must weigh fully double that from Southern India.

65. BULACA OCELLATA; *Syrnium ocellatum*, Lesson (Ibis, 1865, p. 29).

Dr. Jerdon states that this bird is "not found in Lower Bengal." I never obtained a Bengal specimen, but I once picked up an unmistakeable feather of the species in a mango-tope some thirty miles above Calcutta. I have never seen it from the eastward; but *B. sinensis*, Latham (*Strix orientalis*, Shaw; *S. seloputo*, Horsf.; *S. pagodarum*, Temm. Pl. Col. 230), occurs in Siam, the Tenasserim provinces, Malayan peninsula, and Nicobar Islands. A specimen is noted by Mr. F. Moore from the Himálaya; but I doubt this alleged habitat, and believe that it was from one of the sub-Himalayan valleys. Capt. T. Hutton has well remarked that an ordinary collector at one of the Himalayan sanatory stations (say Másuri) employs three or four native *shikáris*, and he sends one or two of them far into the interior of the hills, and others down into the sub-Himalayan valley of the Deyra-doon; and their gatherings of birds, insects, and so forth (from quite different *faunæ* or assemblages of species) are alike brought to England as a collection from the Himálaya! Thus untravelled students are apt to be misled.

69. ASCALAPHIA BENGALENSIS.

Distinct from *A. ascalaphus*, though closely approximating to that species. Dr. Jerdon omits to give the colouring of the irides, which are of a redder and deeper flame-yellow than those of a specimen of *A. ascalaphus* at present in the Zoological Gardens.

70. ASCALAPHIA COROMANDA.

The late Prince Bonaparte associated this bird with *Huhua orientalis* (erroneously placing *H. pectoralis*, Jerdon, as a synonym of the latter), in the 'Revue de Zoologie' for 1854 (p. 542). Prof. Kaup, also, as strangely associates *A. coromanda* with *Huhua nipalensis* and *H. orientalis*, as also the African *Bubo* (?) *lacteus* (Temm.), in his division *Urrua*, while *A. bengalensis* and *A. ascalaphus* are assigned by him to typical *Bubo*! *A. bengalensis* happens to be the type of *Urrua* of Hodgson. The irides of *A. coromanda,* in all that I have seen and kept alive, were of a bright deep yellow, rather than "orange-yellow" as Dr. Jerdon asserts.

71. HUHUA NIPALENSIS.

The *Bubo pectoralis* of Cassin's 'Catalogue of *Strigidæ*' is distinguished from his *B. nipalensis,* which latter is placed as a synonym of *B. orientalis,* and is, moreover, from the Himálaya. Now *Huhua nipalensis* is a very much larger bird than *H. orientalis,* and is otherwise conspicuously distinct from it. The only question that remains is whether *H. pectoralis* of Jerdon, figured in the 'Madras Journal of Literature and Science' (vol. x. p. 89, pl. 1), from Southern India, be distinct from *H. nipalensis* of the Himálaya. A juvenile Tenasserim specimen of this genus, forwarded by Col. Tickell to the Asiatic Society's Museum, Calcutta, was incorrectly assigned by me to *H. orientalis* (J. A. S. B. xxviii. p. 411), as corresponding to the description of *Strix sumatrana,* Raffles (Trans. Linn. Soc. vol. xiii. p. 279), and also Temminck's figure of the immature plumage of *orientalis* (P. C. 289); but I erroneously added *H. nipalensis* and *H. pectoralis* as synonyms, as again in the 'Ibis' for 1863 (p. 26). The same nestling-bird was described by Col. Tickell as *Ptiloskelos amherstii* (J. A. S. B. xxviii. p. 448). It should be referred decidedly to *H. nipalensis.*

72. KETUPA CEYLONENSIS.

Obtained in Palestine by Mr. Tristram (Ibis, 1865, p. 261). The figure thus named by Temminck (Pl. Col. 74) is that of *K. javanensis,* a species which occurs (perhaps as a straggler) on the eastern side of the Bay of Bengal as high as Arakan, in Ramri Island, together with *K. ceylonensis*; but further southward it is the common Fishing-Owl of the Malayan peninsula, and undoubtedly the supposed *K. flavipes* referred to as "common in the Indian islands and Siam" by Mr. F. Moore. Prof. Schlegel does not assign either *K. ceylonensis* or *K. flavipes* to the Malayan subregion; but Mr. Cassin notes a specimen of *K. ceylonensis* from Java, which is doubtless a mistake. Col. Tytler has inadvertently written *javanensis* for *ceylonensis* in his remarks on the fauna of Barrackpore, near Calcutta (Ann. & Mag. Nat. Hist. 1854, xiii. p. 366)*.

74. EPHIALTES BAKKAMÆNA (Pennant); *Otus scops japonicus*, Schlegel (Faun. Japon. *Aves*, tab. ix.); *Scops zorca asiatica*, Idem, Mus. P.-B. *Oti*, p. 30.

Of this small Indian Scops-Owl the Calcutta Museum can show a very complete gradation, from the grey *Scops pennatus* to the bright chestnut or ferruginous *S. sunia* of Hodgson; or, if one semi-link in the chain be wanting, it is supplied by an Indian specimen referred to the European Scops-Owl by Mr. F. Moore. The specific identity of *S. pennatus* and *S. sunia* is certain, and they cannot even be admitted as different races; yet Mr. G. R. Gray (in his B. M. Cat. of Birds of Nepal, 2nd edit., 1863) adopts *S. sunia* for the rufous bird, while the grey bird (with *S. malayensis*, A. Hay, and *S. spilocephalus*, nobis, as synonyms) he refers to the European *E. scops*. Mr. F. Moore makes the same confusion. I am decidedly of opinion, as I have before stated (Ibis, 1863, p. 27), that the proper name for the Indian bird (whether grey or rufous) is *E. bakkamæna* (Pennant). It is the only Scops-Owl which I know of as an inhabitant of Lower Bengal; and I have occasionally obtained specimens in a curious way: they would lodge by day within the moveable "leaves" of a *jilmil* (or "jalousie"), in which singular retreat I have captured them. I have also known *Mus flavescens* to resort by day (with the vain notion of concealing itself) to the same very insufficient hiding-place. Of course the *jilmils* being a little open, to permit of their ensconcing themselves, the animals intercept the light from without, and are so discovered. The Indian (or more probably Chinese) *E. gymnopodus*, Gray, is surely no other than *E. bakkamæna* (*vide* Ibis, 1863, p. 27); but the Malacca race (*S. malayensis*, A. Hay) seems to be somewhat different, and I have not found it to vary in shade of hue; while in India the rufous specimens are certainly more common than the grey; I even think, considerably so.

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* [Mr. J. H. Gurney agrees with Mr. Blyth in considering *Ketupa flavipes* of North-eastern India distinct from *K. javanensis* of the Malay Archipelago, as, though the colouring of the two is similar, the former is fully a third larger than the latter.—ED.]

75. EPHIALTES LEMPIJI.

Although Prof. Schlegel does not know of this species as Indian, it is nevertheless common in Malabar and Ceylon, where it is undistinguishable from examples from the Malayan subregion. It differs from the series next to be noted by its yellow irides.

There is a series of three very similar dark-eyed races, of different sizes and each having its respective range of distribution. The largest is *E. rufitorques,* Bonap. (Faun. Japon. *Aves,* tab. 8, where it is figured with yellow irides, which I suspect is a mistake): wing 7 to 7·5 inches. The next is *E. lettia,* Hodgson, of the Indo-Chinese subregion, spreading westward along the lower regions of the Himálaya: wing 6·5 to 7 inches. The third and smallest is *E. griseus,* Jerdon (*E. lettioides,* nobis), from the Coromandel or eastern Ghâts of the Indian peninsula, where only it has been observed as yet, being replaced in the western or Malabar Ghâts and in Ceylon by the golden-eyed *E. lempiji*: wing 5·5 to 6 inches only. I believe that all of these will have to be eventually recognized as specific races, as also *E. rufescens* (Horsf.) (*E. mantis,* S. Müller) from Sumatra, Java, and Borneo—and a much larger species which is otherwise very like it, *E. sagittatus,* Cassin (Journ. Acad. Phil. ii. pl. 12), of which I have seen several specimens not differing in colour, all of them from the Malayan peninsula. This fine Scops-Owl bears just that relationship to *E. rufescens* which *E. rufitorques* does to *E. griseus* (*E. lettioides*); and I should long ago have named it had I not been under the impression that it was the true *rufescens* of Horsfield *.

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* I have looked over Mr. Wallace's collection of Scops-Owls (obtained by himself) and found no difficulty in resolving them into six species, viz.:—

(1.) *E. sylvicolus* (Wallace). Flores. The largest of them, a young specimen having the closed wing 8·5 inches.

(2.) *E. magicus* (Müller); *E. leucospila,* G. R. Gray. From the Moluccas. Since identifying these, I have found that Prof. Schlegel has likewise done the same.

(3.) *E. menadensis* (Quoy & Gaim.). From Celebes and Flores.

(4.) *E. lempiji,* Horsfield (*Strix noctula,* Reinw. & Temm.). Malayan subregion, Ceylon, and Malabar.

(5.) *E. rufescens,* Horsf. (*Otus mantis,* Müller). Sumatra, Java, Borneo.

(6.) *E. malayanus* (A. Hay). Malayan peninsula.

76. ATHENE BRAMA.

I believe that Dr. Jerdon is mistaken in noting this bird from Ceylon, as also from "Persia and other parts of Asia" west of India. *Noctua indica*, one of the synonyms of this species, is described as being "common about the foot of the mountain near the town of Erzeroum" (P. Z. S. 1839, p. 119). This, I believe, is the only authority for noting it from Persia; and the species was doubtless *A. persica* (Vieillot), *Noctua meridionalis* of Risso, *Athene bactriana*, nobis, *A. gymnopus*, Hodgson, and *Strix numida*, Levaill., jun., which inhabits Middle and Western Asia, Southern Europe, and Africa north of the Atlas; it is common in Afghánistân, but does not enter the Indian subregion, nor even the Himalayan province of the South-Turanian subregion, Mr. Hodgson's specimens having been obtained north of the snow. *A. sonnerati* (Temm. Pl. Col. 21) is stated to have been sent from Pondicherry by M. Leschenault, but no such bird is known in India or Burma. Dr. Pucheran identifies it with *Strix superciliaris*, Vieillot (Rev. Zool. 1849, p. 19), which is therefore different from *Ephialtes sagittatus*, Cassin (Ibis, 1863, p. 21); and Prof. Kaup designates it *Ieroglaux superciliaris*, but without mentioning its particular habitat, which was unknown to M. Vieillot. The same individual specimen in the Paris Museum was described by Temminck, Vieillot, and Lesson.

77. ATHENE RADIATA.

"A single specimen of this pretty little owl was obtained at Keddah (Malayan Peninsula), agreeing in every respect with those obtained from India" (P. Z. S. 1854, p. 262). *A. castanoptera*, Horsf. (*Strix spadicea*, Reinwardt, Temm. Pl. Col. 98), might be expected to inhabit the Malayan peninsula, but I have never seen it from thence, though Helfer (a loose authority) notes it from the Tenasserim provinces (J. A. S. B. vii. p. 861), and his identification might perhaps suffice for a species so remarkable in its colouring, were it not that he might have met with a straggler of the nearly allied *A. castanotus*, nobis, of Ceylon, even as Dr. Cantor procured a stray individual of the Indian *A. radiata* at Keddah. *A. castanotus* is recognized as distinct from *A. castanoptera* by Prof. Schlegel.

80. GLAUCIDIUM BRODIEI.

Obtained by Col. Tickell in the mountainous interior of the Tenasserim provinces (J. A. S. B. xxviii. p. 416). *Athene sylvatica* (Müller), Bonaparte (Consp. Av. i. p. 40), would appear to be an equally diminutive species inhabiting Sumatra.

It will be remarked that a large proportion of the diurnal birds of prey are common to India and Europe—in fact, all of the ordinary European species, except *Archibuteo lagopus, Haliaetus albicilla,* and *Milvus ictinus*, perhaps also *Aquila nævia* as distinguished from *A. clanga* of Pallas; while the only European Owls which extend to India are *Otus brachyotus,* and in the Himálaya only *O. vulgaris*, and, as extreme rarities just within the Indian boundary, *Bubo maximus* and *Athene persica.* The small Indian and East Asiatic Scops-Owl is barely separable from the European race, but is commonly of a bright cinnamon or rufous-chestnut colour, which seems never to occur in the other. The only generally admitted Indian bird of prey whose geographical range extends to Australia is the maritime and very Gull-like *Blagrus leucogaster,* though, if Prof. Schlegel's views be adopted, we should have to add the Australian Peregrine and Hobby, still, however, as distinct varieties of the European species, or *vice versâ*, with equal reason! whilst Mr. Gurney (followed by Mr. Gould, as we have seen) identifies the smaller individuals of the common Indian Kite with the Australian *Milvus affinis.* In this I do not concur, inasmuch as I do not believe that two definite races could possibly be distinguished apart anywhere in India, but that every gradation would be found, from the largest to the smallest. Lastly, three rare stragglers of the family *Falconidæ* from Eastern China and Japan have been met with either just within the Indian boundary or close on its confines, and a fourth (*Buteo asiaticus*) very probably appertaining mainly to the Mongolian subregion north of Tibet—the home also of the gigantic Berkut Eagle, the *Haliaetus pelagicus,* and the grand Tibetan Raven. *Buteo asiaticus* seems to hold pretty much the same relation towards other Buzzards.

[To be continued.]

XXII.—*From Arizona to the Pacific.* By ELLIOTT COUES, M.A., M.D.

THE month spent in slowly passing over the five hundred miles that lie between Fort Whipple, in Arizona, and the coast of Southern California at San Pedro, afforded me a fine opportunity of comparing the *Ornis* of the two regions, which, though possessing much in common, are yet in many points strikingly contrasted with each other. A running commentary upon the more marked ornithological features of the regions traversed may be of interest; albeit the remarks that follow are little more than a collection of the heterogeneous and disjointed notes with which a travelling naturalist's journal is always found crammed.

From Fort Whipple to Fort Mojave, the nearest point on the Colorado river, is a distance of 161 miles in a nearly straight line a little north of west. The nature of the country is such that hardly any change from the Whipple features are to be noticed until the river is nearly reached. At Beale's Springs, a point rather more than halfway, I first noticed *Pipilo aberti* and *P. mesoleucus*, two species abundant in the Colorado valley, but never noticed at Fort Whipple, though found some twenty miles south of that place. As we approach the river, we have an unfailing sign that other species are soon to be encountered, in the increased number and variety of *Cactaceæ*, and their greater luxuriance of growth. And, sure enough, I found, on a dry barren plain covered chiefly with *Opuntiæ*, *Cerei*, and other cactuses, the rare and hardly-known *Harporhynchus lecontii*. A fine specimen, procured September 30th, 1865, is the second one known to naturalists, the type of the species (procured by my friend Dr. J. L. Leconte, at Fort Yuma, California) having remained unique up to the present time. I think it is a good species, quite distinct from *H. crissalis*, to which it is most nearly allied. Both inhabit the whole valley of the Colorado and Gila rivers, and, though thus associating, seem constantly to preserve their characters. They are shy and retiring birds, frequenting the brush and thickets which, to a greater or less extent, cover the dry plains, and keep much on the ground, where their large, stout legs enable them to run firmly and rapidly. Their flight is swift and desultory, performed with quick, jerking motions of their wings and flirting of their long broad tails. I saw several other individuals, but was unable to procure more than one. The irides were brown, the legs, feet, and bill black.

Fort Mojave, on the Colorado river, in about lat. 35°, is interesting to us as the locality whence were lately procured two rare and curious new birds by Dr. J. G. Cooper, so well known as an indefatigable and accurate naturalist, and by him named* *Athene whitneyi* and *Helminthophaga luciæ.* The Owl is a diminutive little species, about equal to *Glaucidium gnoma* in size, but very widely different in form. Dr. Cooper told me that he hardly thinks it is a true *Athene,* though it comes nearer to that genus than to any other North American one. I have just now carefully examined the type specimen, and find my friend's views fully confirmed. The bird is evidently generically distinct from any other North American form, and I have elsewhere so published it. The *Helminthophaga* is a queer little bird, nothing like any of its congeners in its colours, which are rather those of a *Polioptila* than a Sylvicoline, being plumbeous-grey above and white beneath, with a chestnut crown and rump. I had myself rediscovered it during my stay at Whipple, and obtained several specimens, among which was a fledgling just from the nest, which differed notably in colour from the adult, wanting the chestnut crown—though the rump was of that colour—and having the wing-coverts edged and tipped with very light rufous. Both of us have very full notes of the habits of this interesting little bird.

While at Fort Mojave I gladly availed myself of a kind invitation from the Commanding-General of the Territory to accompany him on a *pasear* down the Colorado river, as far as Fort Yuma. This gave me exactly the opportunity I had been desiring, of adding to my list the many water-birds to be found in the Colorado basin. The month of September was consumed in passing down the river to the point where the Gila mingles its waters with those of the larger stream, which is the extreme south-west corner of Arizona, and in returning after a few days spent at Fort Yuma. We were on the little steamer 'Cocopah;' and by a singular coincidence her commander, Captain Robinson, was the man who twelve years before had piloted Lieutenant J. C. Ives and his party in the 'Explorer,' the first steamboat that ever passed over the shores and rapids of this difficult river.

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* Proc. Californ. Nat. Hist. Soc. 1861, pp. 118 and 120.

Sayornis nigricans, a common species throughout Southern Arizona, was perhaps, among the land birds, our most constant companion. Perched, generally in pairs, upon the dense verdure that in many places overhangs the river, it pursued its constant vocation of securing the vagrant insects around it, ever uttering its peculiar unmelodious notes. In all its motions the Pewee of the Eastern States was unmistakeably reproduced. It was, for a Flycather, rather shy and wary, which fact, joined with the almost impassable nature of the thickets, is my only and lame excuse for its absence from my collection. It is not, apparently, a hardy bird, and I never saw it, even in summer, about the Whipple mountains, though in the southern portions, both of Arizona and California, it remains throughout the winter. River-bottoms are but one of its resorts. Like *S. fuscus,* and extremely unlike *S. sayus,* it also delights in deep mountain-gorges and precipitous *cañons,* through which little streams may flow, where upon a jutting bit of rock, or on the bare, flat sand, it unites its sharp cries with the queer ringing laugh trilled out by its neighbour and friend the little *Catherpes mexicanus.*

Often when breaking a toilsome way through next to impassable thickets, I was startled by a loud, clear, sharp chirp, decidedly Fringilline, but far more powerful than usual. It was the alarm-note of *Pipilo aberti,* which everywhere in the valley is a most characteristic bird. Fort Yuma seemed to be its headquarters. A retiring species, like all its congeners, it keeps perseveringly in the most provoking undergrowth, and would rarely find its way into collections were it not so common. It seems to me more decidedly gregarious than most of the genus, often collecting in flocks of a dozen or more, wandering restlessly, yet in a cautious and subdued manner, through the thickets. Associating freely with this species is another, *P. mesoleucus,* which is little less numerous, and to which my remarks upon *P. aberti* equally apply, except perhaps that it has a less powerful note. During the long moult, which lasts from July far into October, both these birds suffer much, and are in such wretched plumage as to be hardly worth preserving.

At Fort Yuma, in September, I was in time to catch *Helminthophaga celata* on its southward journey. It was not very rare, frequenting low trees, young willows and the like, as well as brush-heaps and thickets; I think that it is much less a tree-species than are its Eastern congeners, and that it approaches *Geothlypis* in its habits. At this season the head is perfectly plain, and the bird looks very much like an autumnal *Dendrœca striata.* It is partially gregarous at this season, and its only note is a low, sharp "t'sip."

All along the Colorado valley *Lophortyx gambeli* is singularly abundant. This is a very easily pleased bird, and one by no means fastidious in choice of a residence; for it is equally at home in scorched mezquite-thickets, dusting itself in sand that would blister the naked feet (for the thermometer stood 117° Fahr. in the shade while I was at Yuma!), and in the mountains of Northern Arizona, where pine-boughs are bending under a weight of snow. I have already enlarged on the habits of this bird [*anteà,* pp. 46–55], but I may now add that my friend Dr. Cooper, while at Mojave, brought up young birds by placing the eggs under a common hen, and that he found no difficulty in semidomesticating them as they grew up, to the extent of their associating freely with the barnyard fowls. The eggs, which are white or yellowish-white, with brown spots, were hatched in twenty-four days. From twelve to seventeen have been found in a nest, which latter is a rather rude structure, about eight inches wide, hidden in the grass.

One of the features of the scenery of Yuma is a bird known as the "Colorado Turkey." As the order to which it belongs could never be guessed from this name, I must explain that it is the *Tantalus loculator* of Linnæus, though why called a "Turkey" I know not. These birds are in sight at all times, flying over head with outstretched necks, uttering their rough cries, or statelily promenading the banks of the little lagunas and sequestered pools that fill the river-bottom. Unlike most large *Grallæ,* they do not much affect the open sandbars or even the mud-flats of the river itself, but fairly deserve their common name of "Wood-Ibis," by their partiality for densely wooded pools and swamps. They have also a peculiar habit of congregating in large numbers high up in the air, where with scarcely any visible motion of their broad wings they circle in majestic sweeps. Their pure white plumage and glossy greenish-black wing-tips form a superb contrast; and their beauty renders more ugly by comparison the dull sombre hues of the Turkey-Buzzards, with which at such times they freely associate—though the Vulture and the Wader may vie with each other in ease and elegance of flight, each sailing and circling with that "poetry of motion" which only some longipennine *Natatores* can surpass.

Here is a simple list of some other water-birds of the river, named somewhat in their order of abundance. Such familiar friends will be recognized in all of them, that I need do no more than mention their names. *Ardea herodias, Grus canadensis, Garzetta candidissima, Herodias egretta, Butorides virescens, Recurvirostra americana, Himantopus nigricollis, Botaurus lentiginosus, Ardetta exilis, Nyctiardea gardeni, Chroicocephalus philadelphia, Fulica americana, Pelecanus trachyrhynchus, Phalaropus wilsoni,* and *Podilymbus podiceps.*

I saw many Ducks, but only identified three species—*Dafila acuta, Nettion carolinensis,* and *Querquedula cyanoptera.* It was a little too early in the season for the immense flights of Geese and Ducks which a little later would cover the water. For the first time in my life, I saw our two North American Kingfishers (*Ceryle alcyon* and *C. americana*) together; I believe the latter has not been before recorded from the Colorado river. It is surprising that I did not meet with *Auriparus flaviceps,* since, as Dr. Cooper informs me, it is abundant at Fort Mojave and elsewhere in the valley. *Melospiza fallax* (at best doubtfully distinct from *M. melodia*) is a common Sparrow here.

Before we finally bid good-bye to the river I must advert to the immense numbers of *Hirundo lunifrons* that make its sometimes precipitous and rocky sides their breeding-places. So numerous are the nests at some points, that one spot has received and still bears the name of "Swallow-nest Bend;" and not unfrequently in the midst of the colony of Swallows is placed the rude nest of *Ardea herodias,* flat upon some projecting ledge of rock.

Leaving Fort Mojave, which I did on the 30th of October, before us to the westward lies the Colorado desert—a barren waste of sand and rock which stretches everywhere between the river and the fertile and habitable portions of Southern California. It would be difficult to imagine a region more uninviting or more devoid of varied forms of animal life. It would be a profitless tract for an ornithologist expecting to find variety, though still the few species found are interesting. For whole days hardly more than the Ravens would relieve the monotony of wearisome travel. I cannot forbear to quote from my friend Dr. Newberry, who must have written under the inspiration of the surrounding desolation. "Even on the most sterile and inhospitable portions of the central desert, where heaven withholds her genial showers and earth refuses every tribute to beauty or comfort; where stern and unrelenting sterility reigns supreme and barren sands and rough and ragged rocks, bleached and burnt in the eternal blaze of a cloudless sun, sear the eyeball; here, perched on some blasted pine, the presiding genius of the surrounding desolation, the Raven always sat, and as we defiled past, over the trackless waste, gave us the malediction of his discordant croak." Except the ubiquitous and omnipresent Ravens and an occasional *Anthus ludovicianus,* hardly a bird was seen* for some days after leaving the Colorado, until, crossing the Providence Mountains, we encamped at Soda Lake, the "Sink" of the Mojave river, which, rising in the San Bernadino Mountains of California and flowing in an easterly direction towards the Colorado, is stopped by the Providence Mountains, and quietly sinks in the sand of the desert. Its bed is usually nearly or quite dry, except in spots, for many miles from its sink, and forms the most convenient and perhaps the only practicable route from this portion of Arizona into California. Soda "Lake" is, except at times, even less of a lake than the Mojave of river, being merely a flat muddy expanse, where the ground for miles is white as snow from the thick deposit of saline efflorescence, whence the spot derives its name. A more desolate and forlorn spot can hardly be conceived; but to an ornithologist it has attractions.

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* Dr. Cooper tells me that on this portion of the route he met with *Poospiza bilineata, P. belli,* and *Campylorhynchus brunneicapillus.* The latter, he says, is emphatically and almost exclusively a Cactus-Wren, always found among, and breeding in, plants of this family.

It has been ascertained that just here *Lophortyx gambeli* and *L. californica* find a neutral ground that they both may occupy. Doubtless the western species follows the watercourse until arrested by the desert: I have never heard of its being detected in the Colorado valley, where *L. gambeli* holds undisputed possession; and I think it is exceedingly probable that the representative Jays of the two countries (*Cyanocitta woodhousii* and *C. californica*) may also both be found here; and perhaps the same fact may hold good regarding some other species. Near the sink of the river, Dr. Cooper found *Centrocercus urophasianus*, which I believe is the most southern point at which it has been discovered. I never saw one, nor, indeed, any other species of Grouse, while in Arizona. The same gentleman ascertained the presence of *Trochilus alexandri* on the river. In the heavy rushes that formed clumps of various sizes I heard the loud clatter of *Rallus virginianus*; and happening to be kept awake all night by the unendurable torture of hosts of hungry mosquitoes of a peculiarly large and vindictive species, I am able to state that the Rail emits its unmusical noise as often during the night as the day. Numbers of *Cistothorus palustris* and a few Mallards finish the list of birds observed here.

Towards the head of the river, where the water became permanent, were immense quantities of Geese and Ducks. I pass them over now, as in no way differing from those found at San Pedro, of which I will speak presently.

With the first appearance of anything like verdure, I found myself again among Field-Larks. Arizona is most unaccountably deprived, in a great measure, of these birds; I do not think I saw a dozen during my whole stay there, though many places seem perfectly adapted to their wants. *Gallinago wilsoni* is found in the moist meadows, and over the marshy tracts of the river the common *Circus hudsonius* may always be seen.

Leaving the Mojave at Lane's Crossing, we in one day got through the Cajou Pass of the San Bernadino Mountains. This pass is about the most eastern recorded locality for the beautiful *Oreortyx pictus*; and, regarding the other Quail of California, *Lophortyx californicus,* we need here have no fear that we shall ever be puzzled with a supposed hybrid between it and *L. gambeli;* for no suspicion of the latter's presence here is to be entertained. *Oreortyx* and *Lophortyx* are so radically distinct in the nature of the localities they frequent, as to be distinguished by the people as the "Mountain" and "Valley" Quail.

Behind San Bernadino and the coast lies about eighty-five miles of plain, open and flat, though by no means desert and sterile, the continuity of which is hardly interrupted. Besides the constant features of such plains—*Eremophila cornuta* and *Anthus ludovicianus*—we find two very interesting birds in considerable numbers. One of these is *Athene cunicularia,* which I supposed to replace *A. hypogæa* in the regions west of the Rocky Mountains. I must confess I have my doubts regarding this strict distribution of the two, and also as to whether they are really distinct, which, however, this is not the place to discuss. The Owls are very numerous, living in the burrows of *Spermophilus beecheyi,* a Marmot-Squirrel exceedingly common in Southern California, though I saw none of its "towns" anything approaching in size those of *Cynomys ludovicianus* that I met with on the Arkansaw river. The other bird is *Ægialites montanus,* which seems to me most inaccurately named; for, on the many occasions I have met with the species, it has always been on open, dry, flat, sandy or grassy plains, and *never* on mountains. It may possibly retire to these latter to breed, but I do not think this is the case. Other naturalists support the assertion that the species is exclusively confined to the plains.

It seems, too, to have no special inclination for the vicinity of water, any more than has *Grus canadensis,* or, I had almost said, *Eremophila cornuta.* It is a familiar and unsuspicious bird, and, when not often disturbed, admits of a very near approach, running rapidly and gracefully, with head lowered, often stopping suddenly and, drawing itself up to its full height, watching the intruder with curious eye. Its voice is soft and low, and very peculiar in tone. The iris is dark brown, the legs and feet leaden-blue*.

Among the *Raptores* here at San Pedro we find *Archibuteo ferrugineus* very common. It alights freely on the ground, where I often observed it. At Fort Whipple, where it was abundant, I never saw it except upon trees; and here it may be making a virtue of necessity in thus choosing the bare plain. *Falco nigriceps* and *F. polyagrus* are more uncommon. I shot a specimen of the latter off the roof of my house; it had the eyes brown, bill horn-blue, feet and legs light leaden-blue. *Tinnunculus sparverius, Circus hudsonius,* and *Accipiter mexicanus* are very common indeed. Other Hawks of Southern California, near this locality, are *Buteo elegans, B. cooperi,* and *B. zonocercus,* all of which have been detected by the tireless industry of Dr. Cooper. The last named, an interesting new species originally described from Guatemala by Mr. Sclater (Proc. Zool. Soc. 1858, p. 130), was first obtained within the limits of the United States by Dr. Cooper; I myself rediscovered it on the Gila river in Arizona.

Agelæus tricolor is the common Blackbird of this region. Familiar, tame, and unsuspicious, flocks of thousands continually circle about our very heads, fill the streets of the little town, and blacken the housetops. I am ashamed to say how many I procured at a single discharge of my gun. I noticed that at this season the two sexes keep in a great measure in separate flocks. Of the many that I examined, not a single male was in perfect plumage. I never saw an *A. phœniceus* or *A. gubernator* among them; but great numbers of *Scolecophagus cyanocephalus* are their constant and familiar companions.

The little *Carpodacus frontalis* had been my companion from the Rio Grande to the Pacific; and here I found "Linnets," as they are called, common enough. I was somewhat surprised to find them in full plumage, singing volubly, and apparently paired. But, then, it was not so astonishing after all; for in the garden of Southern California, even in November, I plucked ripe oranges and lemons from the trees, and ate figs and olives and luscious grapes grown in the open air, while the atmosphere was balmy as a May morning at home.

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* This species is generically quite distinct from *Ægialites* or any other genus of *Charadridæ* with which I am acquainted. I have elsewhere instituted a genus for it.

To my surprise and gratification, I was here enabled to study no less than three species of the difficult group of *Passerculi,* all of which I found very abundant. *P. rostratus* kept among the thick weeds of the dry plain, being much on the ground, where it runs as easily as a *Pipilo,* and often flying up into the bushes and resting quietly so that it could be readily shot. It associates freely with both the other species; and I have seen great numbers sunning themselves and catching flies on the piles of lumber that lay on the wharf, when they were so tame that I could have struck them with an ordinary cane. *P. anthinus* seemed confined to the moist salt grass and sedgy weeds of the seashore itself. When with difficulty it was flushed, its flight was very rapid and irregular; and it would alight again almost immediately, and run with great celerity among the roots of the thick grasses. It was thus exceedingly difficult to procure. *P. alaudinus* was common two or three miles away from the coast, but on the seashore itself I never found one mixing with *P. anthinus;* it is a brush- and weed- rather than a grass-species. I found it associating with *Anthus ludovicianus* and *Zonotrichia coronata.*

Regarding the specific relations of these *Passerculi,* I may state that *P. rostratus* differs so widely as to almost merit generic distinction. Of the two others, *P. anthinus* seems tolerably distinct, in its much darker colours, bright yellow about the head, and very numerous, distinct, dark-coloured spots over nearly the whole lower parts, together with a somewhat differently shaped bill. *P. alaudinus* is much greyer and lighter-coloured generally, with a grey rather than yellow superciliary streak, and few sparsely distributed light-grey spots beneath. These points, taken into consideration with the differences of habit above noted, and the fact that, though thus found in the same localities, they constantly preserve their peculiarities, are perhaps sufficient to establish specific diversity. I must candidly confess, however, that I cannot satisfactorily distinguish *P. alaudinus* from the common Eastern *P. savanna.* In large series of the latter, shot about Washington, I have found fully as great differences as I have ever detected in comparing the eastern with the western forms.

The preceding birds are the characteristic species of the immediate vicinity, and include perhaps a majority of the land species. I cannot better give an idea of the number, variety, and interest of the Waders and Swimmers that were all crowded into the little bay of San Pedro, which is at the mouth of the San Gabriel river, than by epitomizing a day that I spent most delightfully sailing about with Dr. Cooper, whose hospitality I enjoyed during my stay, and whose conversation was to me an encyclopædia of interesting biographies of the birds of the Pacific coast.

It was difficult navigation along the intricate channel of the bay, even for our boat which did not draw a foot of water. Most extensive mud-bars and flats were laid bare by the receding tide, all crowded with Waders. Conspicuous among them the large *Numenius longirostris* stalked with dignity about, or flew by us in flocks uttering its loud cries. Associating with each other, and with the Curlews, *Symphemia semipalmata, Gambetta melanoleuca,* and *Limosa fedoa* helped the Curlews to keep us from shooting any Geese by their incessant vociferations. Sprinkled among these larger Waders, immense flocks of the Pigmies, *Actodromas minutilla* and *Ereunetes pusillus,* left myriads of little tracks in the soft mud for the next tide to efface.

Standing in the shallow water, often hundreds of yards from visible land, the Herons crooked their necks and darted their bills at luckless fish—*Garzetta candidissima, Herodias egretta,* and, towering above them all, the great *Ardea herodias,* the latter tall enough to rear his whole neck above the tallest grass of the sedgy flats. More hidden among the grasses and reeds, numbers of Geese were feeding on succulent shoots; but they are so much annoyed that it was hard to kill them. No less than five species are to be seen—*Anser hyperboreus, A. gambeli, Bernicla hutchinsi, B. canadensis,* and *B. nigricans*; and I believe I have named them somewhat in the order of their abundance, though perhaps Hutchins's Goose is commoner than the two first. But over the bay, though we saw many Ducks and Geese, they neither are so numerous as they are a little way from the sea on the lagoons and marshes of the San Gabriel river, or even (in the case of the Geese at least) on the dry bare plains. There is one exception to this, in *Pelionetta perspicillata,* which never, I believe, leaves the sea and its estuaries; they were in sight all day, rising and falling with the waves of the ocean.

On the edges of the mud-flats sat rows of black uncouth-looking birds, bolt upright, with drooping wings, apparently enjoying the sun while digesting the mass of food with which, I have no doubt, their stomachs were overloaded. Gastric activity is usually, in birds as in man, in inverse ratio to mental acuteness; and these birds allowed themselves to be shot with a nonchalance highly amusing and gratifying. *Graculus dilophus* they were, in spite of their white breasts, which only indicated that they were not yet a year old. When older they are lustrous black, but still very different from *G. penicillatus,* which, by the way, is also found here, though rather rare. They have jealous (that is, green eyes), like all Cormorants; and the brilliant orange gular pouch and sides of the bill contrast finely with their dark plumage.

Speaking of these *Totipalmi* naturally calls to mind some others of the tribe. *Pelecanus fuscus* is a constant feature of the air, land, and water of this bay. Strange-looking birds, "all bill and wings," as has been remarked of them, flapping lazily along high over head, and with a queer twisting gyration of the body, with stiffly extended wings and immoveable bill, down they splash into the water with more "vims" than one would imagine them capable of. They are concealed for a few moments in the spray they raise; when they reappear, it is to fly off if the dive has been bootless—to sit still, drain the water from the pouch, and, with a toss of the head, jerk the fish into their capacious gullets if perchance they have been successful. On the water their motions are easy gracefulness itself. Notwithstanding the bulk of their bodies, and the long head and neck to be supported, they sit on the water lightly as an egg-shell.

We see how this is accomplished if we skin one. The hypertrophy of the subcutaneous cellular tissue (which is on the lower parts an inch thick), and its connexion with the hollow bones and air-tubes of the lungs, so that they can inflate it at pleasure, makes them as light as a lifeboat. They fly by long heavy powerful beats, which alternate with short sailings. Often they do just as I have described of the Cormorants, and for precisely similar reasons. At this season (November) their necks are white, their heads and portions of the jugulum yellow. The bill is brilliant carmine or pinkish-vermilion, which, in a few hours after death, fades into reddish flesh-colour. The nail is yellowish white, with a black base; the gular pouch dirty ochraceous green. The space around the eye is pinkish flesh-colour, and the soft base of the upper mandible is black.

While *P. fuscus* was thus so common on the bay, not an individual of *P. erythorhynchus* was to be seen; but two or three miles inland, on the freshwater ponds and lagoons, they are in great plenty. And in these lagoons, with the White Pelicans, let me mention, by the way, that *Macrorhamphus scolopaceus* is very common. It does not seem to go on to the salt-flats at all. I believe its habits are very similar to those of *Micropalama himantopus.* The species is one that is rather snubbed by American ornithologists, and has hardly found a champion to vindicate its distinctness from *M. griseus,* except Mr. Lawrence. Neither Dr. Cooper nor I have any doubt of its validity as a species.

Being on a sea coast, of course we anticipated *Laridæ* of several sorts. Nor were we disappointed. Foremost among the larger species stands "the Gull" *par excellence* of the Pacific coast, *L. occidentalis,* so well marked by its huge bill and dark mantle. It is a singular fact that, contrary to the law so generally prevailing among *Lari,* this bird does not, in winter, have the occiput and nape streaked with grey. I do not say this is never the case; but of hundreds (perfect adults) that I have closely examined—for it is not a shy species—not one had any trace of grey, but the parts were as pure white as in summer. At the same time all the other Gulls were thus marked. Probably the next common species was *Larus delawarensis*; and after that come *L. californicus* and *L. smithsonianus.* The latter, first brought, I believe, from the Pacific coast by the United States' Exploring Expedition under Commodore Wilkes, is now recognized as a regular inhabitant of that region. *Blasipus heermanni* was common, as usual assiduously devoted in his attentions to the Pelicans.

Connecting the Gulls with the Terns, came the little *Chroicocephalus philadelphia,* everywhere so abundant, and here one of the most common of the longipennines. Terns of several species were dashing about over our heads; I could identify positively only *Thalasseus regius.* But I think I also saw *Sterna acuflavida,* which has not, to my knowledge, been as yet recorded from the Pacific coast of North America, though Mr. Salvin has it from Pacific Central America. A small Tern, not very common, was in all probability *S. forsteri;* and here I must make the passing remark that the more I see of the immature stages of this changeable species, the more thoroughly I am convinced that *Sterna havelli* is not a valid species.

Our generally received impression regarding the Loons and Grebes is that they are exceedingly difficult to shoot, in consequence of their wariness joined to unparalleled powers of rapid diving. Now this depends, I think, altogether upon the extent to which they are annoyed and persecuted. The tamest Ducks, or even Coots, could not be more unwatchful and unsuspicious than were the Loons and Grebes here at San Pedro bay. As our boat sailed along they would rarely move off before giving me a fair shot; and I almost invariably killed my bird, since they did not dive so quickly as to avoid the shot. And about the wharf, and among the boats moored near it, they swam as unconcernedly as tame Ducks. I remember once when I could have struck a *Colymbus pacificus* with a boat-hook. And leaning over the taffrail of some vessel, with several of these Loons quietly disporting in the water below me, I felt that indeed I was a favoured ornithologist; for how many of my brethren have been able to study Loons in their native wilds, only a few feet from the eye, and to note every motion, when in, or on, or over the water? Their appearance when returning to the surface after a long dive is peculiar; and really they look more like fish than birds. The bubbles of air clinging all over their backs gives them a beautiful spangled appearance; and when emerging from the sea, with a slight shiver of the feathers these spangles disappear; the water rolls away too, and the feathers are as dry as though they had not been submerged. A common habit with all the Loons is to swim slowly about with the neck gracefully curved, and the bill thrust up to the eyes in the water. What this is for I really do not know; certain it is I never saw them take fish or other food in this way. They seemed to be simply *tasting* the water.

The species we saw were *C. torquatus* (or *glacialis,* as Mr. Sclater would contend), *C. septentrionalis,* and *C. pacificus.* Concerning this last, there is now really no doubt, I think, that it is a species exceedingly closely related to *C. arcticus,* and in fact scarcely to be distinguished except by some differences of dimension, as stated in my "Review of the *Colymbidæ* and *Podicipidæ*"*. Mr. Lawrence's types were young birds; but dozens of mature ones, in breeding-plumage, which I have examined, show precisely the pattern of coloration that obtains in adult *C. arcticus.*

The Grebes we saw were *Æchmophorus occidentalis* and *Podiceps californicus,* both of which were very common, the latter the most so, on the lagoons back from the sea as well as on the bay. The first named is a splendid-looking bird on the water, riding very lightly, its long neck held erect, the bill pointing horizontally forwards. This length of neck makes the motion during the act of diving a very peculiar one; and not one of them ever was quick enough to escape my shot. They fly with both neck and feet outstretched. It is a pity the colours of some parts change in drying; they are so very beautiful. The iris is bright orange-red, with a shade of pink; and on widely separating the eyelids, a narrow ring of pure white is seen encircling the cornea. The bill is rather bright yellow, the culmen and gonys more greenish; the hard parts of the mouth the same, the soft fauces light purple or lavender. The insides of the legs and soles of the feet are black; the outside of the tarsus and dorsum of the foot dull bluish-green; the centres of each web yellowish flesh-colour. I found their stomachs crammed with a species of slender aquatic grass.

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* *Vide* Proc. Acad. Philad. April 1862, p. 28. Dr. Cooper has obligingly furnished me, from his MS. notes, the following description:—"Adult female, San Diego, Cal., May 6. Differs from *C. arcticus,* as figured and described by Audubon, in the smaller size; spots on wing-coverts oblong, not round; outer edge of quill black, not grey; tail black. Purple of throat rounded below instead of pointed. No black and white streaks on front of neck. Tarsi and feet black. The webs and outside of the feet bluish in life."

All these birds were around us while on the bay. A long low sandy island lies across its mouth as a breakwater; and on the sea-side of this the Doctor assured me I should see another bird that does not ever leave the sea-beach itself, and withal so rare in collections as to make the acquisition of good specimens a matter of some consequence. It was the *Ægialites nivosus* of Cassin, first noticed, I believe, by Dr. A. L. Heermann, in the Ornithological Report of Lieut. R. S. Williamson's Survey for a Pacific Railroad (1859, p. 64), under the name of "*Charadrius cantianus*, Lath.," but very different, of course, from any other North American or European Plover—so much so, indeed, that Bonaparte places it in his genus *Leucopolius*. It was only a few hundred yards from where we landed, on the bay side of the island, to the shore of the "far-resounding sea;" but, by racing at full speed through the heavy soft sand, joined to the exciting expectation of so soon seeing a new bird, I was quite breathless, and my heart was thumping furiously by the time I stepped on the moist sand. Yes! there they were sure enough, a flock of snow-white little beauties, dallying so fearlessly with the huge waves. I fancy my chagrin and disgust must have partaken a little of the sublime when, after blindly blazing away into the flock, I picked up a capful of—*Sanderlings*! Dr. Cooper's cachinations nowise tended to smooth my ruffled mental plumage. However, a few moments afterwards a flock of *Æ. nivosus* alighted close by me; and, with a little patience and strategy, I soon had a dozen of the lovely birds in my hands. They are not at all shy, rather the reverse; but the hue of their backs so exactly corresponds with that of the sand, that it is next to impossible to see them until they move. I believe they never leave the open sandy beach for lagunes or mud-flats.

They are found in little flocks of from two or three to as many dozen, and associate in the utmost intimacy with *Calidris arenaria.* On approach they run swiftly, with lowered heads, only taking flight when hard pressed; but they scatter and straggle so much that it is difficult to kill many at a shot. At high tide they are found in the loose, uneven, dry sand just above the water-mark, but at other times feed in the wet sand and among the weed-covered rocks, quite among the breakers. They fly rapidly, in close flocks, wheeling so as to show alternately the upper and under parts. Their note is a low mellow whistle. Those that I shot were not very fat. In the winter plumage the rufous-brown cap is wanting, the crown being nearly or quite the same colour as the back. The bill is black; the eyes dark brown; the legs pale livid blue; the feet blackish. Length from 6·5 to 7 inches, extent of wings 13·5 to 14 inches.

I should like much to take my readers with me on the Pacific, that we might study together such rare and interesting birds as *Cerorhina monocerata, Ptychorhamphus aleuticus, Brachyrhamphus hypoleucus,* and the numbers of little-known Petrels that enrich the coast of Lower California. But the length of this paper warns me that I must check my restless pen.

Washington, D. C., January 29, 1866.

XXIII.—*On the Genus* Oxynotus *of Mauritius and Réunion.* By François Pollen, Honorary Assistant of the Royal Museum of Leyden, &c.

(Plates VII. and VIII.)

A short time since, on paying a visit to Mr. Edward Newton, I had the opportunity of reading in 'The Ibis' for 1865 (p. 530) some remarks by its editor on my "Note sur l'*Oxynotus ferrugineus,*" lately published by the Société Impériale d'Acclimatation et d'Histoire Naturelle de l'île de la Réunion. I must acknowledge that my description and figures of the *Oxynotus* of Réunion do not apply to the allied bird of Mauritius, and that I probably made a mistake in describing the former under the name of *O. ferrugineus.* When I published that paper I had never seen a specimen of the Mauritian bird; and it was only on my visit to the Museum at the Royal College of Port Louis that I first had the pleasure of seeing one.

Thanks to the kindness of Mr. Bouton, I had the opportunity of examining examples of the Mauritian *Oxynotus*, and of comparing them with those of Réunion. I was then convinced that the remarks of the Editor of 'The Ibis' were exact and correct.

I may here state that M. Jules Verreaux, in the "Annexe" to M. Maillard's 'Notes sur l'île de la Réunion'*, says (p. 162), "Tuituit. *Oxynotus ferrugineus*, Sw. (Lanius ferrugineus, Gm.). Oiseau décrit sur la femelle, qui est rousse, le type venant de l'île Maurice"; and also remark that the Colonial Museum at St. Denis possesses a specimen of the Réunion bird, determined by this learned ornithologist to be a young male of *O. ferrugineus*, whereas I am now sure that it is an adult female of what I am about to describe as a new species; for, on comparing examples of *Oxynoti* from the two islands, I find such differences of size and colouring between them as to lead me to believe that they do not belong to the same species; and when we know that these differences are constant, so that in Réunion an *Oxynotus* has never been found with the form and colour of that of Mauritius, nor in Mauritius has there ever been found an *Oxynotus* like that of Réunion, we must conclude that the birds of the one island are distinct from those of the other.

The following Table shows the relative proportions of the birds of both islands:—

	Mauritius.		Réunion.	
	♂	♀	♂	♀
Long. tot.	175 mm.	190 mm.	177 mm.	177 mm.
„ tarsi	23	26	24	25
„ dig. med. sine ungue	16	16	15	15
„ mandib. sup.	30	28	20	20
„ alæ a carp.	100	104	95	94
„ caudæ	82	87	90	87

From this it is apparent that the Mauritian *Oxynotus* exceeds that of Réunion in a majority of the above dimensions.

The males of the Mauritian species have the upper part of the head, back, and rump of a *dark smoke-grey*, in immature (?) specimens slightly tinged with rufous. The chin and throat are white, changing on the upper parts of the breast into dirty white mixed with grey, which extends over the belly. The primaries are black, with the basal half or more of the inner webs white, so as to form a concealed white bar, the fourth and fifth being also externally edged, and, as well as the secondaries, tipped with white. The rectrices are black, edged above with grey, and broadly tipped with white. The under tail-coverts are white. Bill black; legs lead-colour.

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* [*Cf.* Ibis, 1863, pp. 103, 104.]

The males of the Réunion species have the upper part of the head, back, and rump of a *clear bluish-grey*. The chin is white, changing on the throat into bluish-grey, which extends over the breast. The primaries and secondaries are much as in the Mauritian species, but the white edgings and tips less conspicuous. The rectrices are black, broadly tipped with white. The belly and under tail-coverts are white. Bill brownish black; legs dark lead-colour.

But it is in the plumage of the other sex that the greatest diversity is to be noticed. The adult females of the Mauritian species have the upper part of the head dark olive-brown, with a yellowish line over the eye; the lores grey; the cheeks yellowish-white, striped with dark brown. Upper parts of the neck, back, and rump dark rufous-brown. Chin rufous-white, streaked with brown, and passing into bright ferruginous, which extends to the vent; the tibial feathers slightly barred with dark brown. Remiges and rectrices dull brown, edged with ferruginous, the latter broadly tipped with dull ferruginous-white. Bill brownish-black; legs dirty lead-colour.

In the Réunion species, on the other hand, the adult females have the upper parts of the head, back, and rump dark olive-brown, tinged with ferruginous on the latter. A whitish line over the eye; the lores and cheeks bluish-white, streaked with dark grey. Chin bluish-white, passing into white slightly tinged with ochraceous, which extends to the vent, and is thickly barred with dark brown on the sides of the neck, the breast, belly, and tibiæ. Primaries dull brown, narrowly edged with fulvous-white; secondaries the same, but more broadly edged and tipped with fulvous-white; tertials edged with light ferruginous. Rectrices dull brown, more or less broadly tipped with white. Bill brownish-black; legs dark lead-colour.

The differences thus pointed out are more clearly visible in the accompanying plates (Plates VII. and VIII.), wherein the birds from the two islands are represented at one-half their natural size. Their manner of life and their song are also quite different; and should ornithologists agree with me in considering the *Oxynotus* of Réunion a species distinct from that of Mauritius, I hope they will allow me to designate the former by the name of *O. newtoni* as a proof of my regard for Mr. Edward Newton, who is known as a careful student of ornithology; and further, also, that they will adopt for the latter the name of *O. typicus* recently conferred upon it by Dr. Hartlaub (Journ. für Ornith. 1865, p. 160)*. I must not, however, fail to remind them that my friend, Dr. Auguste Vinson of Réunion, was one of the first to observe that the *Oxynotus* of that island was a distinct species, as in his manuscript notes he says "Nous n'avons trouvé nulle-part la description de cet oiseau."

It surprised the reviewer of my paper (Ibis, 1865, p. 530) to learn that *Oxynotus* is useful to mankind, as he mentions my statement that it inhabits the most impenetrable forests. I can assure him that *O. newtoni* is of very great service as a destroyer of the insects which do much harm to the palm-trees (which furnish the colonists with the excellent *Choux-palmiste*) and to other trees of value in this island.

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* [Averse as we are to the change of a name by which any species has become known, there seems to be in this case a greater amount of legality than usual for the alteration proposed. There is no doubt that MM. Quoy and Gaimard were mistaken in referring the subject of their figure, which "provient de l'île de France" (Voy. *Uranie*, Zool. pl. 17), to the Rufous-bellied Shrike, or "Fiscal" of Latham (Synops. i. p. 163), the *Lanius ferrugineus* of Gmelin (Syst. Nat. I. i. p. 306), a very well-known species which inhabits the Cape of Good Hope (Strickland, Ann. & Mag. Nat. Hist. vii. p. 29; Sundevall, Crit. Framställn. Le Vaillant, no. 68) and belongs to the genus *Malaconotus*. But if the specific name *ferrugineus*, has on that account to be discarded, Swainson's publication (Fauna Bor.-Am. ii. p. 483) of that of *rufiventer*, from the Paris Museum, would seem to give the latter priority, and it is a question whether the Mauritian bird will not have to stand as *Oxynotus rufiventer*.—Ed.]

Hitherto nothing is known of the manner of breeding of the Réunion *Oxynotus*; but my friend Mr. Edward Newton has been more fortunate with respect to that of the Mauritian species, and he has favoured me by adding the following communication respecting it:—

"The *Oxynotus* of Mauritius, or "Cuisinier" as it is, for what reason I do not know, called, begins to build towards the end of October or beginning of November. Two of the three nests that I have found were placed in small trees not more than twenty feet high, and of a sort of mop-like growth, the nest being nearly in the centre of the "mop," and almost out of sight from below, on account of the small, thickly-growing leaves. One tree was a "Bois-balai" (*Erythroxylum hypericifolium*), the other a "Bois de pomme" (*Lyzygium glomeratum*). The bark of both these trees is as white as that of a European birch. The third nest was in a tree of somewhat thinner growth, but, I believe, also a "Bois-balai," and was easily to be seen from the ground. One of the nests, which is now before me and contained two eggs when I took it, is flat, shallow, and very small for the size of the bird (whose head and tail projected considerably on either side), being 4·5 inches in external, and 3 inches in internal diameter. The height of its walls is nowhere more than 2·5 inches. It is composed of long fern-roots and tendrils of some plant, studded on the outside with a common white and black lichen, and well secured by spiders' webs woven over its outer surface. M. Pollen, in his 'Note' on the *Oxynotus* of Réunion, stated his belief that its nest would be "dans la forme des piegrièches (*Lanii*)." The nest of the Mauritian species is very like that of *Lanius rufus*, both in size and general appearance. The eggs measure about 1·07 inch in length, by about ·74 inch in breadth. They are of a very pale sea-green, thickly marked with ash-coloured spots of a middle size, and blotched, especially between the larger circumference and the obtuse end of the egg, with patches of olive-brown, these latter markings, though of irregular shape and size, having a general longitudinal tendency.

"The "Cuisinier" is found, I believe, in every part of the island where the original forest is left; but I fear that before many years, when its haunts have disappeared, it also will vanish. It is a very silent bird, and not often heard except in the breeding-season, when it has a cry which reminds me of that of the Nuthatch (*Sitta cæsia*). Its other note is harsh, and, though not so loud, is not unlike that of a Jay (*Garrulus glandarius*).

"Besides the peculiarities of plumage which the genera *Oxynotus* and *Ceblepyris* possess in common, the habits of the two are, as far as my observation goes, very similar; and, taking *C. cana* as an example, I fail to see any real generic distinctions between them. Specimens of the *Oxynotus* of Réunion having been kindly forwarded to me by M. Pollen, I am enabled to express my undoubted opinion that they are specifically distinct from the Mauritian bird."

I may conclude by observing that at first sight the female of *Oxynotus newtoni* might be taken for the young of *O. typicus*.

St. Denis, Réunion.
17th February, 1865.

[We may here add a description of the nestling of the *Oxynotus* of Mauritius from a specimen sent by Mr. Edward Newton, and of which a figure is also given in Plate VII. General colour above somewhat like that of the adult female, but each feather tipped with light fawn-colour, so as to give a mottled or barred appearance, resembling that of the nestling *Turdus viscivorus*. The remiges and rectrices of a paler hue than in the adult female, with more conspicuous edgings and tips of a lighter colour. The throat nearly white in the middle, passing into light fawn-colour, each feather having a mesial longitudinal streak of brown. At this stage the feathers of the rump do not seem to have the characteristic stiff bases.—Ed.]

XXIV.—*On the Ornithology of Palestine.* Part IV.

By the Rev. H. B. Tristram, M.A., F.L.S., C.M.Z.S.

[Continued from p. 88.]

The Scansorial group is very scantily represented in Palestine. In many parts of the country, as in the Ghor, as well as in the uplands of the south, scansorial birds are wholly absent; in the other parts the species are very few. The scarcity of wood alone accounts for this in Western Palestine; but it seems strange that the thickly-wooded and extensive ranges of Gilead and Bashan, with their varying forest of pine, oak, olive, and jujube, and every variety of temperature, should not, so far as we know, afford a home to more than a single species of Woodpecker. Further investigation, doubtless, may reveal additional species; but unless they be very scarce and local, I think they could hardly have escaped us.

The most interesting of the scansorial birds is the Great Spotted Cuckoo, *Oxylophus glandarius* (L.), now, by the observations of Messrs. Allen and Cochrane in Egypt and of Lord Lilford in Spain, very well known to English ornithologists, but whose habits were almost a mystery to the naturalists of this country when Mr. Salvin and I published our observations in 'The Ibis' for 1859. In Palestine the Spotted Cuckoo is by no means rare in spring and summer, and has a wide range, visiting alike the forests of Gilead and the oliveyards of the western country; but we never saw it in the Ghor, and probably it does not frequent those districts, where neither the Jay nor the Hooded Crow are found. It is a migrant, returning early in March. We first met with it in the plain of Gennesareth, on March 4th, on which day I shot three specimens, one male and two females. They were then evidently on passage, and we never afterwards found them excepting in wood on the higher ground. They were exceedingly noisy, keeping up a continuous chatter in the *Zizyphus*-bushes, and occasionally darting off in pursuit of a locust, with which they would return and devour it leisurely on their perch. A few remained there for a couple of days; but on our two subsequent visits we never observed them on the plains, although the Common Cuckoo was frequently both heard and seen. In the open oak-glades of Bashan, at the end of March, we found *Oxylophus glandarius* generally distributed, though never in great numbers. The small birds were apparently suspicious of its habits; for the Spanish Sparrows would pursue it in flocks with a deafening din, till even a Cuckoo's life ought to have been a burden to him. Whether the Sparrows had discovered that he had the appearance of a Raptor without his powers, and therefore enjoyed the luxury of bullying with impunity, or whether a high moral sense of the iniquity of any evasion of parental bird-duties impelled them, I know not; but their persecution was unrelenting, and a most unquiet time the "Long-tails" must have had of it. Their only revenge seemed to be to keep up as incessant a chatter themselves. When at peace, they were often to be seen hopping clumsily about in the open places with an ungainly attitude, as though their tails were rather too long, or at least as if they were not mounted high enough on their legs.

It was not till the 2nd of May that we obtained the Spotted Cuckoo's egg, when four were brought to us with three Hooded Crow's eggs from the same nest in a gorge near Mount Gilead. One of the Cuckoo's eggs was fresh, two others ready to hatch, and the fourth addled, while the Crow's eggs had been for some time incubated. Thus it was evident that there must have been long intervals between the deposition of the Cuckoo's eggs; and it is very possible that the Cuckoo may have deposited one egg before any Crow's were laid. This is exactly in accordance with Lord Lilford's experience in Spain, where he took the eggs of *Oxylophus* from a nest of the Common Magpie containing no other eggs—and with the experience of our party in the Atlas, where we repeatedly found several Cuckoo's eggs and none others in the nest, and were thus led to believe that it incubated its own. Of its parasitic habits there can now be no doubt. We did not find its eggs in any other nests in Palestine. At the time of its arrival the Jackdaws had hatched, and the Jays had not generally begun to breed; and, in accordance with the observations of Messrs. Allen and Cochrane in Egypt, it prefers the nest of *Corvus cornix* when it can be had. On Mount Carmel, where it is very common, and where the Hooded Crow is not, the eggs will probably be found in the nests of *Garrulus melanocephalus.*

The egg of *Eudynamis orientalis*, the Indian Koel, bears, as might be expected, considerable affinity to those of *Oxylophus*, and is generally deposited in the nest of *Corvus splendens.* Dr. Jerdon states that it in general lays only one egg in each nest, and mostly, but not always, destroys the eggs of the Crow at the time of depositing its own. In both these habits *Oxylophus* seems to differ from *Eudynamis.*

The Common Cuckoo, *Cuculus canorus*, L., was a much later arrival than the other. We did not observe it before the 30th of March. It is generally spread over the country, and, unlike its ally, is particularly abundant in the Jordan valley, where it is ceaselessly pursued with noisy clamours by the *Crateropus chalybeius*. The only egg of this Cuckoo we found was near Jericho, in the nest of a Desert-Lark, *Ammomanes isabellinus*. In my list in the Zoological 'Proceedings' for 1864, I gave with great hesitation as new, under the name of *Cuculus libanoticus*, a bird shot by Mr. Cochrane in Lebanon in April. Further consideration induces me to cancel this species, as I feel now convinced that it is only a very remarkable specimen of the *Cuculus hepaticus*, a supposed species, satisfactorily disposed of by Temminck, which he says is far more common in the south-east than elsewhere. He has also mentioned the fact of these hepatic birds retaining the juvenile plumage to the second year, as must have been the case in our bird obtained in April. I possess hepatic specimens of the Indian *Polyphasia tenuirostris*, which differ similarly from the typical form, and especially in the reversal of the ordinary barring of the rectrices, black instead of white. The rufous plumage and the partial retention of the youthful mottled dress may be a symptom of disease or weakness, which may also account for the unusually diminutive size of the specimen.

Of Woodpeckers Palestine boasts but a single species, *Picus syriacus*, H. & Ehr., which I take to be identical with *P. cruentatus*, Antin., as the latter author mentions but this single species. I regret that I am not now able to refer to Malherbe's splendid Monograph. Wherever we found the Jay, the Woodpecker was invariably in its company—in habits, flight, and voice precisely like our *Picus major*, with which it is so closely allied as not to be easily distinguishable at first sight. I have been somewhat perplexed by Ehrenberg's diagnosis, in which he says it is of the size of *P. medius*, and "pectoris fascia transversa interrupta coccineo-rosea." I have examined more than twenty specimens, and find them all nearly the size of *P. major*; and in only one can I see the faintest trace of the red band so conspicuous in *P. numidicus*. Possibly Antinori, not recognizing the description, redescribed his bird anew as *P. cruentatus.* I can scarcely believe that Ehrenberg and Antinori, each finding only a single species, should have met with one distinct from the bird which we obtained in all the olive-groves, woodlands, and forests of the country. The unfailing distinction between the Palestine bird and *P. major* is, that while the latter has the nape of the neck black, with a narrow white stripe behind it, the white in *P. syriacus* is continuous from the eye and ear-coverts round the crimson occiput and to the nape of the neck inclusive, and is only interrupted at the centre of the occiput by the black plumage of the back; at the same time the black interrupted collar below is much narrower than in the European bird. The Woodpecker is a permanent resident, found alike in the oliveyards near Hebron and in the pine-forests of Gilead, but especially abundant about Carmel and the oak-glades of Bashan. It never descends to the Ghor or Jordan depression. The Wryneck, *Jynx torquilla,* L., is a scarce bird, so far as our observation goes, and a migrant, returning from the south about the middle of April. It is difficult to account for the absence of any representative of *P. minor,* or of the genus *Gecinus,* so abundantly represented from Britain to Japan. They may possibly linger in very small numbers, but have probably been exterminated from the scarcity of timber.

To turn now to the *Passeres.*

Of Wrens we found but one, and that only in the north, where it seemed very scarce, *Troglodytes parvulus,* Koch. It is slightly lighter in plumage than my British specimens, as also are my Algerian skins.

The Tree-creeper, *Certhia familiaris,* L., which ought to exist, did not occur to us; but we frequently met with the beautiful Wall-creeper, *Tichodroma muraria* (L.), a permanent inhabitant of the rocky defiles in the northern and central parts. We never saw it in the south, where probably the cliffs are too parched and dry to supply it with its insect food. I know few ornithological sights more interesting than to watch this beautiful little creature as it flits along the face of a long line of cliff, with a crab-like sidling motion, rapidly expanding and closing its wings in a succession of jerks, and showing its brilliant crimson shoulders at each movement. It generally works up the gorge at nearly the same elevation, with its breast towards the face of the rock, and moves close to its surface in a perpendicular position, rapidly darting forth its bill and picking out minute insects as it passes along. In a few minutes it would return down the valley again, quartering the rock in a line parallel to its former course. In the Wady Hamam, near Gennesareth, we twice observed chinks in the precipice where the Wall-creeper was breeding, but they were hopelessly inaccessible.

In the same localities we found *Sitta syriaca*, scarce and local, but always attracting attention by its restlessness and loud note. In the grand gorge of the Leontes it is particularly abundant. Mr. Sclater has rightly corrected me (Ibis, 1865, p. 309) for the statement that the bird we procured south of Hermon was *Sitta krueperi*; but now possessing two of Dr. Krüper's type-specimens, I feel confident that I frequently saw this little Nuthatch in the Leontes gorge. I shot them, but was unable to recover the specimens in that tremendous depth. But I saw them closely enough to identify the chestnut collar; and Mr. Cochrane took a nest in this place which he kindly shared with me, the eggs of which are only half the size of those of our Common Nuthatch, and doubtless belong to this species. I must now add to the list in the Zoological 'Proceedings' *Sitta cæsia*, Meyer, as pointed out by Mr. Sclater, which Mr. Bartlett first shot in a wooded glen under Hermon, and I afterwards in the Lebanon. The under surface is of a deeper rufous than in ordinary European specimens.

Of the Titmice only one, *Parus major*, L., is common in Palestine; it is found in all the woods and oliveyards east and west, but never in the Jordan valley; and its coloration is very bright. It is rather an early breeder, but we found one nest ready to hatch in an olive-tree near Jerusalem on April 26th. The only other species we saw were in the Lebanon—*Parus lugubris*, Natt., and *Parus ater*, L., which is very abundant at the cedar-groves but not in the lower ranges of the mountains.

However scantily some of the above groups are represented in the Palestine fauna, the *Alaudinæ* are most abundant and conspicuous everywhere. Of the eight subgenera which are found in the Palæarctic region the whole are here represented, and by no less than fifteen species. The conspicuous features of the Palestinian ornis are beyond doubt its *Alaudinæ* and *Saxicolinæ*. In the southern wilderness in winter the flocks of Larks were in amazing numbers, consisting not of one or two but of eight species. We shot them by scores, and lived on them for days. The most abundant of all was perhaps the large Calandra Lark, *Melanocorypha calandra* (L.), a partial migrant, and wintering in the desert and southern wilderness, but breeding in the corn-plains and in the north, especially under Hermon. It appears that there are two races of this bird,—one larger, and darker in plumage, which breeds in the corn-plains, identical with the Calandra of Algeria; the other smaller and more rufous, sometimes almost russet, which remains all winter near Damascus, and breeds in the uplands. My new species, *Calandrella hermonensis* (Proc. Zool. Soc. 1864, p. 434), forms a very pretty link from the subgenus *Melanocorypha* to *Calandrella*. Undoubtedly belonging to the latter, and only half the size of the former, in the interrupted black collar it much resembles the Calandra.

Each of the three species of *Calandrella* is distinct in its habitat. The elegant little *C. deserti*, Tristr., the smallest of the group, is a strictly desert-bird, frequenting regions similar to those where it was discovered in the Sahara, in which it is a permanent resident, and less gregarious than most of its congeners. *C. brachydactyla*, Kaup, is, on the contrary, a summer migrant, revisiting the central country late in spring and not occurring in the plains or desert in the winter. *C. hermonensis* appears to be confined to the higher mountain-zone of the north, and to be there a permanent resident. It breeds three weeks earlier than *C. brachydactyla*, from which it is distinguished by its larger size, longer and more slender bill, bright rufous coloration, and by the distinctness of the blackish collar. There is also a much smaller extent of white on the outer tail-feathers.

The next group, *Ammomanes*, is an exclusively desert form, and very closely allied to the typical *Alauda*. While in the Sahara it is represented by four species, we found but two in Palestine, both confined to the Dead-Sea region and the southern wilderness. Of these, *A. deserti* (Licht.) is the least common, being found only in the highlands close to the Dead Sea, in very small bands. It may be considered a distinct variety from the Saharan *A. deserti* (=*A. isabellina*, Temm.), from its paler and less rufous coloration and its more robust bill. The black on the rectrices is also further extended. But I cannot see any good specific difference, especially as two specimens in my collection from Nubia present an intermediate link in coloration. I have no doubt of its distinctness from the next form, *A. fraterculus*, mihi (P. Z. S. 1864, p. 434), which is smaller, with a very short conical beak and a darker throat. This is by far the most abundant of the Desert-Larks and the widest in its distribution. We had long been familiar with it, and had collected many specimens, before the larger species was met with and was recognized at once by us at Engedi as distinct, from its flight and note. Up to that time, having no specimens for comparison, we had taken the lesser form to be identical with the African bird. The eggs are very distinct from those of any other species of Lark, having a creamy-white ground, evenly powdered with very fine brown and reddish dots, and no large blotches. They are not unlike some varieties of the Pied Wagtail. The eggs of *A. fraterculus* are more thickly spotted than those of the other species. I regret that I have had no opportunity of comparing the Palestine species with the Indian ones described by Dr. Jerdon, as they might throw much light on the distribution of this interesting group.

Of the typical *Alaudinæ*, *Alauda arborea*, L., is the only one which we found breeding; it remains all the year in the country, wintering in the hills about Jerusalem in small flocks, and dispersing into the neighbourhood of oliveyards and woods in the breeding-season. It is not an uncommon bird. *A. arvensis* we found only in winter, on the seacoast in large flocks; and it does not appear to remain in any part of the country in spring. Probably these flocks are migrants from the far north, as they never penetrate inland. There their place is taken by the closely allied species *A. cantarella*, Bp., of which there were myriads in vast flocks about Beersheba in winter, where there were none of *A. arvensis*. We were unable to find their summer residence, and did not revisit the south at the breeding-season. Mr. Swinhoe's Chinese specimens are precisely similar; and I possess a specimen also identical, which I shot more than twenty years ago near Geneva.

Of the Crested Larks, *Galerita*, Palestine affords four acknowledged species. *G. cristata* (L.) is the commonest bird of the country, in the open grounds of the central, northern, and coast-regions, remaining all the year, and breeding as late as June, though most of the nests were taken about the end of April. *G. abyssinica*, Bp., is the form found in the south and the desert. I include it without recognizing its specific value, as Bonaparte simply gives for his diagnosis "Similis præcedenti at distincta colore deserti." In a large series I find it utterly impossible to draw a line. The *G. cristata* of Galilee differs quite as much from *G. cristata* of northern France as it does from *G. abyssinica*, being intermediate in coloration. The next species, *G. isabellina*, Bp., I willingly admit, from the differences in size, beak, and crest. The specimens we obtained in the Ghor es Safieh, at the south end of the Dead Sea, in no way differ from those of the central Sahara and Nubia. To these are to be added my new species, *G. brachyura* (P. Z. S. 1864, p. 435), at once distinguishable by its comparative length of wing and shortness of tail; it is in fact the representative species of the Woodlark among the *Galeritæ*. It appears very local in its distribution, and we only found two specimens in the central Jordan valley.

Of the beautiful Horned Larks, Palestine affords the finest species, *Otocorys penicillata*, Gould, strictly confined to the edge of the snow-line on the very summits of Hermon and Lebanon, where it consorts with *Montifringilla nivalis* and *Pyrrhocorax alpinus*. It was a beautiful sight to watch these Larks scattered all over the dome of Hermon, warbling their rich yet subdued notes, with erected crest, on the desolate tops of the rocks which strew the summit. In their action they are very unlike most other Larks, and do not attempt to soar. Most of the nests were hatched when we arrived at their breeding-place; and we obtained only one sitting of eggs, very like those of *O. alpestris*, but larger, of a greenish-white, thickly covered with grey-green blotches. The nests are very compact and neat, deeper than those of any other Lark, and generally imbedded in a tuft of *Astragalus* or *Draba,* finely lined with grass roots. This species does not assume a yellowish face in the breeding-season, but has the throat pure white. It may at once be distinguished from every other by the great extent of the black on its breast. Mr. Swinhoe's Tientsin specimen I find from comparison to be the true *O. alpestris,* and not this species, to which he referred it.

Widely differing in its habitat is the last of the Palestine *Alaudinæ, Certhilauda desertorum* (Stanley), a scarce bird in the southern deserts. Its habits have already been very fully described by me (Ibis, 1859, p. 427). We saw it several times, but obtained only a single specimen. *Otocorys bilopha,* Temm., found by me in the Sahara, is described by Ehrenberg from Arabia Petræa, but did not come under our observation.

On the Pipits there is little to remark. Five species are included in our collection. Of these the most abundant was *Anthus campestris,* Bechst., found all over the cultivated coast and hill districts, but not in the Jordan valley. It is a permanent resident, and we obtained several nests on the ground on bare hills in April. It is one of the tamest of birds, and particularly affects the mule-paths, flitting along in front of the traveller and keeping unconcernedly a few yards ahead. In winter a few of them may generally be seen consorting with the more numerous *Galerita cristata* (L.). *Anthus spinoletta* (L.) we shot but once, in the marshes of the Huleh in spring, but saw it several times in winter near Jericho, where I took a nest of six eggs in April, which I can refer only to this bird, though, unfortunately, I did not identify them. I also possess a specimen shot at Wady Feiran near Mount Sinai in March, a most unlikely locality. It is, however, well-known as an Egyptian bird. The specimens exactly correspond with one I shot on the east coast of Ireland.

Anthus pratensis, L., occurs in small numbers throughout the winter everywhere, and a few pairs were found by us in favourable localities up to midsummer. A specimen shot at Jericho on new year's day is so peculiar in its coloration that it might well pass for another species. It is without the dark spots on the flanks, and those on the throat are of the faintest; yet I can see no specific characters to afford a diagnosis. Other specimens obtained in the same district are precisely like our own.

Of *Anthus cervinus*, Pall., we only obtained a single specimen, on the coast of the Plain of Sharon in winter in February.

Anthus arboreus, Bechst., is a scarce bird in Palestine, but occurring in winter as well as in spring, though at the former period only obtained by us in the Jordan valley. It breeds in the north.

Of the Wagtails we saw but little. During winter we never met with any Yellow Wagtail, and in spring we only once fell in with them. When at Jericho, April 14, I observed a large flock of *Budytes cinereocapilla* (Savi), evidently on their migration; they remained but one evening; and I secured several specimens, all of this form. On the next morning the flock took its departure for the north; nor was this bird ever seen by any of our party, excepting myself. If it had remained to breed, I think it could scarcely have escaped our observation; and I infer that it only occurs in Palestine on passage. I may add that I saw in Jerusalem a skin obtained there of *B. nigricapilla*, Bp. From a large series of specimens I am inclined to make the induction that there is but one *Budytes flava*, and that the variations in the intensity of the colour of the head are not sufficiently determinate to afford specific value. From the British Isles we have a regular series of gradations till we reach Greece, from the green-headed *B. rayi* of this country to the black-headed *B. nigricapilla*. Yet in Spain and Algeria the intermediate forms occur, while they decidedly predominate in Italy and Tunis. In Greece, where *B. nigricapilla* is most frequent, *B. cinereocapilla* is not uncommon; and thence as we proceed eastwards the intensity of coloration diminishes, till in China and Amoorland we find *B. flava*, and in Japan *B. rayi* may be expected. Mr. Swinhoe's notes (Proc. Zool. Soc. 1863, p. 274 *et seq.*), are well worth consideration on this subject.

Motacilla sulphurea, Bechst., is common in winter, but leaves in February, long before assuming the nuptial dress. *M. alba*, L., is very abundant everywhere in winter, but becomes scarce as the spring advances, and is not seen at all in the south in summer. A few remain to breed in Galilee, where, in the hills, we took the nest.

M. lugubris, Temm., was obtained by the late Mr. Herschell in winter; but we did not meet with it on this expedition, though very diligent in our search. It certainly, however, must be included among the birds of Palestine, as I carefully compared my Egyptian specimens with Mr. Herschell's (Ibis, 1862, p. 279) and found them identical. There has been hopeless confusion in this group, owing to want of comparison of specimens, and to the interchange of the names *M. lugens* and *M. lugubris* by Temminck and Schlegel. *M. lugubris* seu *lugens,* T. & S. (Faun. Japon.), is identical with *M. japonica,* Swinh. (Ibis, 1863, p. 309, note), and may at once be recognized by the primaries and a great part of the secondaries being pure white almost to the end. In this respect it differs from all other species. *M. lugubris,* Temm., of the occurrence of which in eastern Asia we have no evidence, has the primaries white for only one-third of their length from their bases, and the secondaries edged with white. It appears rare in collections, and I have only my own two specimens at present to refer to; but in no way can it possibly be mistaken for a variety of *M. alba.* I am, however, surprised to find it identical in the minutest particulars with one of Dr. Kirk's specimens in my possession, from Zambesia (Ibis, 1864, p. 318) and labelled "*M. vidua,* Sund." I think here we have the difficulty explained. The true *M. lugubris* (= *M. vidua*) is an African form, only occasionally penetrating to the north, probably by the shores of the Red Sea, and so from time to time found on the Mediterranean. Mr. Swinhoe's notes (*ut supr. cit.*) are careful and accurate, but I cannot agree with him in throwing any doubt on the decided specific distinctness of all these birds.

Cinclus aquaticus, Bechst., can only claim a place in the Palestine list from its occurrence in the mountain-torrents in the recesses of the Lebanon. In the Nahr el Kelb, Nahr Ibrahim (Adonis), and Ain Fijeh it is not uncommon. The plumage slightly varies from that of British specimens. The white extends lower down the breast, the abdomen is not of so deep a chestnut, and the vent-coverts are tipped with whitish. The back of the head and the shoulders have a more rufous tint than in our examples. I have not been able to procure specimens from Eastern Europe to ascertain whether this variation indicates the eastern race. We never met with the Redwing, and only once or twice with the Fieldfare (*Turdus pilaris*) in winter. I have a specimen shot in February close to Jerusalem. *Turdus musicus* often occurred in winter in the higher grounds; and I occasionally noticed it in the wooded parts of northern Galilee in spring, but we did not find its nest. *Turdus merula*, on the contrary, was scattered in every part of the country throughout the year, remaining to breed even in the sultry Ghor. It was nowhere abundant, and was one of the most retiring and shy of the inhabitants of the thickets. It is precisely identical with our Blackbird. We never found the Mistletoe-Thrush, though it must certainly exist in the Lebanon, and probably in Gilead, since it remains in the Tunisian Atlas and in Asia Minor through the year.

The Bulbul of Palestine (*Ixus xanthopygius*, H. & Ehr.) I have already described (Ibis, 1865, p. 81), as well as the only representative of the Timaliine group, *Crateropus chalybeius*, Bp. I may add to my description of the former that the specimens from the Jordan valley are at all seasons of the year much lighter in colour than those from the upper country, and that this distinction holds good without exception in a series of over thirty specimens.

XXV.—*Ornithological Notes from Formosa.* By Robert Swinhoe, Her Majesty's Consul at Taiwan, F.Z.S., &c.

(Plate IX.)

The last Number of the expired series of 'The Ibis' having at length reached me, I have given it my attention. The "Notes on the Birds of Siam," by Sir Robert Schomburgk, deserve a few comments. Under the head of *Alcedo bengalensis*, the remarkable "white-spotted species of the *Halcyon* family" is, without doubt, *Ceryle rudis*, of wide distribution. I would suggest that Sir Robert's "*Turtur suratensis*" should be rather *T. tigrinus* of Temminck, represented in China by *T. chinensis*.

The observations on the habits of *Sturnopastor nigricollis* I can confirm, excepting the fact of its breeding "in the hollows of the trunks of trees." All the nests that I have come across in China of this species have been built in loose circular form, large and domed, and placed among the topmost twigs of high trees. But perhaps this bird, like *Acridotheres cristatellus* (L.), sometimes adopts one style and at other times another, consulting its own taste and necessity. The Siamese representative of *A. cristatellus,* my *A. siamensis* (P. Z. S. 1863, p. 45), Sir Robert does not mention.

The Crow Pheasant, *Centropus philippensis,* is said to be "not larger than our Cuckoos." Surely *Centropus affinis* (Horsf.) is meant. Both species are, however, known to inhabit Siam. Their breeding-habits have been observed and already described by other travellers.

I question whether the Siamese *Copsychus* be not rather *C. mindanensis* than *C. saularis.* If it be so, what is the range of the former species?

Estrelda amandava is brought in large numbers from the Straits to China as a cage-bird.

The description given of *Hydrophasianus sinensis* applies to *Metopidius indicus* rather than to the first-named bird.

On the 7th of October, while returning from the Snipe-marshes near Takow, I got a close view of a *Locustella,* which I think was my *L. minuta,* before noted in South China. Some way up a hill I heard the cry of Kestrels, and seeing a wing flapping, I thought it was one in the jaws of some beast of prey. I clambered up the hill, and had almost reached the spot, when up flew two Kestrels from each other's embrace. They were immature birds; but as I had no gun with me I was obliged to let them fly away in peace. The spot where they had been fighting was stained with blood and covered with feathers. I continued my ramble, and from a rock again put up one of them. He looked "seedy," and I suspect was one of the combatants.

October 14.—A party of Night-Herons (*Nycticorax griseus*) flew overhead just as it was getting dark. They hovered over the confines of the sea, and then turned back. Their flight is slow and somewhat hovering, and they observe no order or figure.

October 22.—A friend returned from a shooting-excursion this afternoon. The Snipes bagged were *Gallinago media* and *G. stenura,* in equal numbers, and one very large specimen of *G. solitaria.* This last bird was of a richer ochreous-brown than usual. It was a female, and on dissection was found to possess the peculiar cæcal appendage before referred to (Ibis, 1865, p. 231). Several long thin white tapeworms were wound round its intestines, the longest worm measuring two inches*. The stomach was more muscular than in the Common Snipe, and contained a mass of green fibrous matter, apparently *Algæ.* Can the use of this substance be to aid digestion? The *cæca* were minute, as in *G. stenura, G. media* having them long. Among the other water-birds procured, the most noteworthy were two examples of *Totanus fuscus* and one of *T. affinis.* The latter is new to the Formosan list, but I have procured it before at Amoy. Mr. Blyth and others had some doubts as to *T. affinis* being a good species, but I am convinced of its validity. My friend observed several pairs of this bird; and as I know it to be amongst the earliest arrivals near Amoy, it is not improbable that a few breed in low latitudes in China.

TOTANUS AFFINIS, Horsf. Bill olive-green at basal half, black at tip. Inside of mouth dusky flesh-colour. Iris deep brown. Ear-coverts behind the occipital line of the eye, and large for the size of the head. Legs and toes rich ochreous-olive, with black nails. Tail of twelve feathers, the two central about ·2 inch the longest, the next ·1 less, the rest equal. It was a female, on dissection showing a cluster of minute eggs. Its stomach was heart-shaped, Snipe-like, and not very muscular, with a black lining, and containing one minute *Paludina* with shell entire, besides remains of freshwater insects, together with algæ-like fibres. Its whole body was imbedded in fat. I examined carefully its intestines, but could discover no *cæca* of any kind.

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* [Some specimens sent home by our correspondent have been kindly identified for us by Dr. Cobbold as *Tænia gallinaginis,* Rudolphi, Synops. Entoz. p. 173.—ED.]

Both specimens of *Totanus fuscus* were females. Their stomachs were also Snipe-like, but more muscular than that of the foregoing. They were filled with remains of small crustaceans. The cæcal appendage was prominent.

Throughout October *Phylloscopus sylvicultrix* was abundant, as also *Lanius lucionensis*. Some of the latter continue on well into December. In October *Egretta alba* shows himself in our marshes, but he has then assumed his yellow bill, and is shorn of his dorsal and pectoral plumes. One was winged the other day; and I have him now in keeping, as I wish to note the vernal change of colour in his bill, and the dawning of his nuptial livery.

As I before mentioned [*anteà*, p. 126], I received in September, from the mountains near Tamsuy, a collection of birds which had been shot in August, but I was not able to attend to them till November. The following are the notes I made.

Passer russatus, T. & S., Faun. Japon. The first female of this species yet procured in Formosa. A good deal like the hen of *P. domesticus*, but smaller. Its upper parts are, however, more tinted with chestnut; and it has other peculiarities, which are well described in the 'Fauna Japonica.' Its bill is light brown on the upper mandible, and yellow ochre on the lower.

Aix galericulata (Mandarin-Duck). A pair—both in the ugly plumage of the female, showing that after the breeding-season the male of this Duck also assumes the female garb. ♂, length 13·5, wing 8·9. ♀, length 15, wing 8·7. Instead of the dull brown quills touched with grey that mark the female wing, the male has the exposed parts of the quills fine dark green with pearl-white margins. The rest of his plumage is lighter and more glossy. His spectacle-streak is more defined, and on his forehead are still a few green feathers. The bills and legs of both male and female are too dry to admit of their colours being distinguished. In an account of the Birds and Beasts of Formosa given in the Chinese statistics of the Taiwan territory [*vide suprà*, p. 207], the Mandarin-Duck is admitted as a species indigenous to the island. This I was very loth to believe, as, knowing it to be partial to inland waters, I could not understand how it could make the migration to this island every winter.

The evidence now before me tends to show that it is a resident on the inland waters of Formosa. This fact I could not at first reconcile with the notion that in China it was a migrant, repairing to the high latitudes of Amoorland to breed. The Chinese, however, declare that such is not the case with all individuals of this species, for many pairs are known to breed regularly in the lakes of Central China. The same habits obtain in its congener, the *Aix sponsa* of America. The Summer-Duck is said to be a resident and to breed throughout the United States, even in the most southerly of them, as also in the West India islands. Those, then, that belong, so to speak, to the north would be driven down by the freezing of the waters in their accustomed haunts, and they merely shift southward in quest of open water wherein they may seek their daily food. This explains one part of the case in point; the other, with regard to an inland Duck finding its way to an island and settling down therein, I leave open to theorizers.

Megalæma nuchalis, Gould. The immature bird has no tinge of blue on the wings. Its back is dull green and devoid of the yellow wash; and the fire-tipped feathers of the back of the neck are wanting. The yellow on the throat is paler, and the large bright red spot of the lower neck is represented by only a few light specks. Bill lighter and browner, with an ochreous edge to the base of the lower mandibles. This species belongs to the subgenus *Cyanops.*

Dendrocitta sinensis, var. *formosæ.* In the young bird the blue grey of the head, hind neck, and rump is much sullied and mixed with the liver-brown colour of the back. Several of the tertiary quills are tipped with the same; and the smoke-grey of the under neck and breast is also strongly tinged with liver-brown. The tail is ashy grey for the greater part of its length.

Corvus colonorum. An adult. Agrees well with the characters already given of the species.

Urocissa cærulea. Full-grown young. Head and neck a dull blackish, *a few of the occipital feathers being tipped with violet.* (Darwin again!) Upper parts much as in the adult, but duller and swamped with smoke-grey on the back and rump. White tips to wings and tail washed with buff. Under parts smoke-grey. Basal half of the *remiges* on the underwing edged with salmon-buff. The stems of the remiges are of the same colour. Bill nearly as bright red as in the adult. Legs and toes well washed with black.

Psaropholus ardens. First full plumage. Bill brownish, tinged with blue. Legs leaden-blue. Head and hind neck dull black; throat and under neck the same, freckled with white. Axillaries and *tibiæ* brownish black. Belly whitish, smeared and streaked with brown, more or less blackish. Wing deep brown, quills narrowly edged, paler. Wing-coverts broadly tipped with reddish-buff, which colour margins the first tertiaries. Some of the scapulars tipped with same, and in the nestling these spots probably extended to the dorsals also. They still occur here and there on the back of the full-fledged bird; but the red is crowding them out, and has already become crimson on the rump and tail. The tail, however, is still washed with black. In the fledgeling stage this bird must be very Turdine, more so than the Yellow Orioles.

On the 7th of November I received a few birds from Consul Caine at Swatow. They were the following:—*Pelecanus philippensis,* fine mature male with curled occipital crest; *Nycticorax griseus,* in immature or first plumage; *Gallicrex cristata,* male in young plumage, distinguishable from the female by its redder tinge and larger size; *Butorides javanica,* mature male; and *Tchitrea principalis,* immature, with reddish wings and tail, and dusky bill and legs. The Pelican received this time is the only mature specimen of this species that I have yet procured. I have sent it home for identification.

My account of our Formosan *Turnix rostrata* will long ere this have reached you [Ibis, 1865, p. 543]. You will therein learn the fact of my having discovered the bird in attendance upon its young, that the only parent so engaged was the male (found so to be on dissection); and you will read the remarks I was led to make on this curious occurrence. The third volume of Jerdon's 'Birds of India' has just reached me; and turning up *T. taigoor,* Sykes, I find (p. 597) the following:—"The females are said by the natives to desert their eggs, and to associate together in flocks; and the males are said to be employed in hatching the eggs ; but I can neither confirm nor reject this from my own observations." It is easier to make observations on the nesting of birds in Europe than in tropical countries; so you had better set your Andalusian correspondents to scent after the species of this group that occurs within their region. It is likely enough that this advantage over the male of which the human fair is possessed only in leap-year, will be found to be annually enjoyed by their more fortunate sisters among certain birds; and the right of contending for their husbands would then, according to Mr. Darwin's theory of sexual selection, be the cause of their developing a handsomer plumage than their mates. I have an idea that among the *Rhynchææ* the duties of incubation also devolve upon the male bird; for the females are found knocking about together in flocks before the close of summer, at a season when more matronly birds prefer looking after their families to gadding. I have not, however, been fortunate enough to fall in with the nest of our representative of this very interesting genus ; and Dr. Jerdon makes no remark on the subject.

I was in Amoy the last few days of November. I found in a friend's aviary a bird that has not occurred to me in South China before. It is a *Porphyrio,* smaller than *P. poliocephalus* of India, and certainly not that species. It may be *P. smaragdinus,* Temm., of the Straits. It was in too bad plumage for me to take a note of it worth having. My friend told me that he got it from a Chinese rustic who was playing with it, and who said that it had been taken in that neighbourhood. I was told that at night its plumage displayed a phosphorescence!

At the Pescadores, as is usual, I was delayed both going and coming. With the exception of a Peregrine Falcon and two or three Gulls, I saw no wild birds there. In the chief town, Makung, several pairs of the pretty White Dove were brought to me for sale. As I have before stated, these Doves are said to be reminiscences of the former Dutch possession of these islands, and to have been introduced from Java. They are now bred by the Chinese in confinement, and are much prized. They seem to me to be simply albinos of the Domestic Dove, which is usually referred to *Turtur risorius.*

On the 17th of December, while riding down to this port from Taiwanfoo, I was quietly walking my horse through the town of Ar-kongteem, when I spied, in a cage hanging up at a shop-door, a bird new to me. I stopped, and tried to induce the shopman to sell it to me, but in vain. The next day I sent one of my hunters to bargain for it. He succeeded in getting it, though at no small figure. The bird was provided by its former master with a small pot of water, and another of fried rice, the grains of which latter it picked up individually with its bill and munched after the manner of Finches. Suspended from the roof of the cage, over a high perch, hung a dome of soft cock's hackles shaped like a large shuttle-cock inverted. Under the cover of this the bird would creep to shelter itself from the night's cold—a pretty and cheap invention, which, I think, might be recommended to lovers of the more tender birds at home. The little captive was extremely lively, continuing to hop about incessantly, and clinging to the top bars Titmouse-fashion. It uttered repeatedly a pleasant series of notes, and only occasionally a single note. When frightened, or wanting to attract attention, it would give forth a suppressed "chur." It was very tame, coming to the side of the cage when any one approached it, and pecking at the protruded tongue. Its Chinese master had reared it from the nest; with me it lived only a few days; but I could not ascertain the cause of death. The specimen was a female. A few days later my hunter succeeded in getting me a male. This little gem was housed in a similar manner to the last, but was provided, in addition, with a small bowl of water, in which he delighted to bathe both morning and evening. The food supplied was of two sorts, pounded millet-seed in one cup, and a kind of "German paste," made of pounded rice and the yelk of egg, in another. He fed well, revelled in the sun, and roosted under his hackled roof apparently quite content. His note was more monosyllabic than that of the female, and he moved about more sedately. If one approached the cage he would begin shaking and quivering his wings, chirruping, and sidling slowly towards the person. If the face were put down to the side of the cage, his agitation and the tremor of his wings would increase; and he would keep on this fun as long as the face continued near. But if the finger were thrust through the bars he would fly at it with great fury, pecking and biting very hard, and charging again and again at it, each time with redoubled onslaught. He was always ready for a fight, and seemed by his manner to challenge it. He made no difference between stranger and acquaintance; but the presence of several people cowed him, and he became shy. He was altogether the most pugnacious little bird I have ever seen, and in the way he went about his battles very similar in style to *Leucodiophron chinense* and *L. taivanum.* Before I had time to try him with insects, or, indeed, to learn much further about him, to my great annoyance I found him also cold and stiff at the bottom of the cage. The Chinese must have a secret for keeping them alive which I have not yet succeeded in possessing. In plumage and other respects the male and female seem in every way similar. I should like to introduce the species as

SUTHORA BULOMACHUS[*], sp. nov. (Plate IX.)

Supra fusco-olivacea; corona tectricibusque partim alarum, cum remigum marginibus, rufis; cauda alisque brunneis; rectricibus transversim vix striatis, earum externis pogoniis olivaceis: subtus albida; lateribus, tibiis crissoque olivaceis; axillaribus lacteis; pectore mentoque roseo suffusis et leviter fusco striatis; rostro brevi (fere *Pyrrhulaceo*) pedibusque pallide plumbeis.

Long. 5·3, alæ 2, caudæ 2·4 poll.

Bill light brownish-leaden, with a tinge of pale purple horn-colour on tip and edges. Irides rich brown. Legs and claws bright purplish leaden-brown, with dingy yellowish soles; nails pale horn-colour, purplish along their ridges. Head brick-red. Upper parts brownish-olive. Tail hair-brown, indistinctly barred on the rectrices, and edged exteriorly with olive-brown. Remiges a deeper hair-brown, broadly margined with brick-red, so as to make the wing look red for its greater part when closed. Wing-coverts tinged with reddish. Axilla pale cream-colour; inner edge and most of quills nearly white, showing the under-wing for the most part white. Breast and under neck washed with pale silvery rose-colour, with a few light streaks and freckles. Underparts dingy cream-colour; flanks, thighs, and vent olivaceous.

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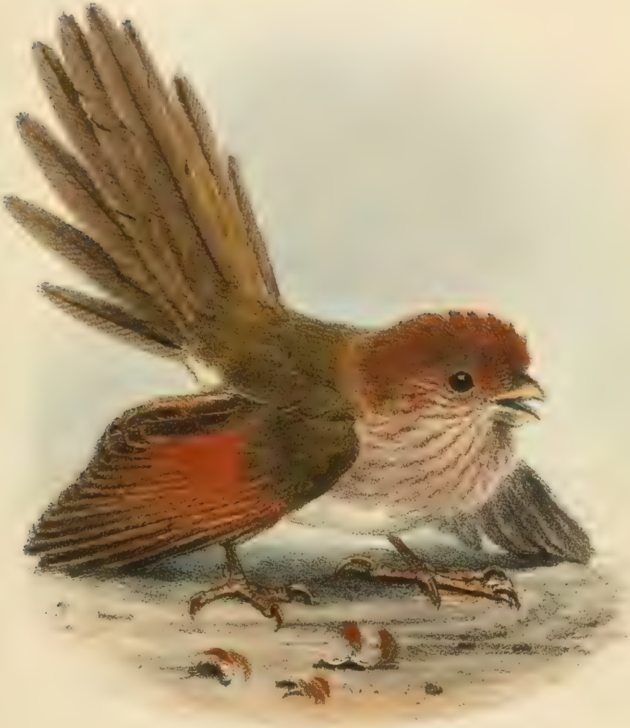
[*] βουλόμαχος, *qui cupit pugnare.*

[illegible]



J. Wolf lith.

M & N Hanhart imp.

SUTHORA BULOMACHUS

From Dr. Jerdon's 'Birds of India,' (ii. p. 7) I am inclined to think that this species is a second of Mr. Blyth's genus *Chleuasicus,* and in style of colouring is even more nearly allied to *Paradoxornis ruficeps,* Blyth, than is the already-described species *C. ruficeps,* Blyth. The bill has a few light bristles at the rictus. The feathers of the head are rounded and thick-set, the ear is large and oval, its rostral line within the occipital line of the eye. General feathers of plumage much as in *Prinia.* The tail, too, is very similar to those of members of that genus, except that it numbers twelve rectrices, and is usually carried cleft into two halves. The first lateral tail-quill is 1·25 inch shorter than the longest median quills, and is a good deal narrower. The tail-quills are much graduated, and broader as they approach the middle. Wing rounded and a good deal as in *Prinia*; first quill short and narrow; the second and third graduating; the fourth only ·1 inch shorter than the fifth, which is only the least bit longer than the sixth and seventh; thence the decrease onwards is very gradual. Legs thick and heavy for so small a bird; hind toe and claw disproportionately large as compared with those in front. Tarsi about ·6 inch; front claws cultrated at sides, hind claw nearly smooth; outer toe a little longer than inner. The foot is quite that of a *Timaliine* bird, and to that section it doubtless belongs.

Dissection of female.—Trachæa with the ring above the *bronchi* strongly protruding and muscular. *Œsophagus* above the *thorax* dilatable; the *proventriculus* somewhat long and granulated; stomach large and circular, about half an inch in diameter, with very strong lateral tendons; *epithelium* yellow, adnate, deeply corrugated, and containing siliceous grits; intestines short and thick; cæca not perceptible. Ribs six pairs on each side. Sternum short, broad, and rounded, with long coracoids and clavicles.

The Chinese of the coast are not acquainted with the species; but the Chinese of the interior call it "*Bang-taou*" (*lit.* Net-gamble), and prize it very highly for its pugnacious propensities. Its young are procured from the hills, reared by hand, and nurtured with great care, and when mature they are fought for wagers like the *Hwameis,* the Quail, and *Copsychus saularis.*

This bird is also well known to the Indians of the interior, and was no doubt originally procured from them by the Chinese. The Chinese name for it is, I suspect, only a version of the name it goes by among some of the hill-tribes. To the aborigines, however, it is more than a mere fighting pet. It is their bird of omen, and apparently the ruler of all their actions. In the "Dictionary of the Favorlang Dialect of the Formosan Language," by Gilbertus Happart, 1650 (translated by W. H. Medhurst, 1840), it is mentioned as "*Adam*, a certain small bird, less than a Sparrow; variegated with a long tail; from whose cry future good or bad fortune may be presumed; if it cries out twice or four times, it betokens misfortune; but if once, or thrice, or five times, then good success; if anything above this, it intimates a still greater blessing, according to the number of cries." Again, in Ogilby's 'Atlas Chinensis' (vol. ii.), in some notes afforded by "David Wright, a Scotsman," who spent some years in Formosa during the occupation of the Dutch, it is stated, with reference to the mode of warfare among the Formosans, that "Before they march into the field they superstitiously observe the dreams which they had the night preceding, and augur from the singing and flying of a certain small bird called *Aidak*. If this bird meets them flying with a worm in his bill, they take it for an infallible sign that they shall conquer their enemies. But if the bird flies from them, or pass by them, they are so much disheartened by the ill-omen that they return home, and will not engage until they have better signs." Again, on the subject of the chase, "Before they go out they tell to one another the dreams they had the preceding night, and also neglect not augurial observations; insomuch that if the bird 'Aidak' meet them, they count it a good omen. But if it flies either on the right or left side of them, they put off the sport till some other time."

Most nations have their emblematic bird, beast, or reptile; and I now introduce to the readers of 'The Ibis' the emblematic bird of Formosa—small, it is true, but well typifying a land of which Ogilby remarks "that each town being a republic, they still have wars and are at difference one with another, town against town, village against village, insomuch that peace never set foot in that isle." The Chinese rule has not introduced a better order of things, but has rather most unhappily thrown in a more powerful element to provoke dissension and mutual extermination among the ill-fated heirs to the soil. If Formosa is ever destined to be a jewel in some European crown, our little *Bulomachus* may some day find himself emblazoned on the armorial bearings of a well-governed colony. Meanwhile I cannot do better than let his pretty portrait adorn the pages of 'The Ibis.' I send you the better of the two skins I possess, and I am sure Mr. Wolf will do the species justice. Its claims on the naturalist, and on the politician equally, demand for it a first place.

Takow, S.W. Formosa,
30 December, 1865.

In comparing my Notes already published in 'The Ibis' with my Journal for 1864 at Tamsuy, I find some jottings, which are of more or less importance, omitted in the former; and as I make that esteemed periodical the storehouse for my ornithological "ramblings," I must ask indulgence to have them now inserted.

"*Garrulax pœcilorhynchus*, Gould. 1 March, 1864. Bare skin between the eye and ear fine French-grey. Legs light leaden-grey, with yellowish sole-pads. Claws flesh-colour, greyish on the basal half." By the way, I see from Bonaparte's 'Conspectus' (i. p. 373) and Jerdon's 'Birds of India' (ii. p. 66), that there is already a *Timalia pœcilorhyncha*, Lafresnaye, which has been identified with *Layardia subrufa* (Jerdon). It will perhaps be necessary for Mr. Gould to give our bird some other specific name.

"*Urocissa cærulea*, Gould. I was very anxious to get a live example of the species home to the Zoological Society's Gardens. My hunter had nine captured in the hills with a noose-trap. He unfortunately boxed them all up together in one basket, and fed them on boiled rice. Five were dead before the basket reached me. I was having cages made for them, and in the mean time left them together. A loud, continued screeching took me quickly to the basket. One bird was standing on the top of another and hammering him most terribly with his bill. I took the hint, and gave them thereafter a free supply of raw meat. Three survived and did well, each in a separate cage. They fed voraciously on flesh, even on the bodies of their comrades. All kinds of insect-life seemed acceptable to them, especially cockroaches. I had therefore great hopes of getting one home to England alive. I sent my finest sample to Hong Kong; but before a chance for shipment occurred he died of ophthalmia and vertigo. Their irides were a light pearly king's-yellow, and their pupils were unusually large. They kept up a continued chattering during the day, which sounded like the twittering of several Finches together. After a while they became tame; and one in particular used to ruffle his feathers and sing in a subdued tone (as if to himself) for a greater part of the day. If the finger were held to him, he would stand high on his legs, divide the feathers of his breast, half open his wings, throw back his head, and, uttering a warning aspiration, stand ready to attack the intrusion."

This species does not appear so common in the southern mountains. I will get my hunters here to try for live birds. It would be a handsome set-off to the two species of this noble group already in the Gardens.

" *Oreocincla hancii,* Swinhoe (Ibis, 1863, p. 275), 15 March, 1864. The wing of this specimen measures 6·5 inches, tail 4·25 inches. It is rather smaller than the one I procured before, and may be a female, as that was a male. It seems much more copiously lunulated on the breast with black."

" SPILORNIS HOYA, sp. nov.

" A pair bought at Tamsuy, 29 March, 1864. Differs from *S. cheela* by its smaller size, by its crest being composed of shorter and smaller feathers, by its shorter and more wedged tail with the central transverse band not half the width it is in that species, and by its wing- and tail-coverts being profusely spotted with white. It would appear to be intermediate to *S. cheela* and *S. bido,*—*S. holospilus* of the Philippines, with which it ought to have the closest affinities, being one-third smaller than *S. bido.*

" ♂. Length 27 inches; wing 18·5, first quill 4·3, second 1·5, third ·2 shorter than the fourth, which is the longest in the wing; the first four quills are deeply indented on their inner web, the first six narrow towards their tips; the rest become more obtusely ended as the secondaries are approached. Tail about 13 inches long, composed of twelve broad feathers slightly narrowing to their ends and graduated, the outermost being 1·25 inch shorter than the middle ones." (In a more adult specimen, procured in January 1866, from the southern mountains, the difference is about 1·6.) "Tarsus 4·25. Middle toe 2·2, its claw 1·1; inner toe 1·4, its claw 1·2; outer toe 1·5, its claw ·8; hind toe 1·2, its claw 1·2. Tarsi covered with rather large hexagonal scales, largest along shank; toes with smaller imperfect hexagons, larger on upper surface, and towards their tips transforming into transverse scutes. Legs dingy yellow, brighter on the toes; claws black. Bill light bluish horn-colour, bluer at the base and browner towards tip of upper mandibles. Cere and rictus bright yellow, paler towards and round the eye. Irides bright yellow. Coronal and occipital crest-feathers white, tipped with black. General plumage hair-brown, blacker on the cheeks, and brighter on the underparts. Wings banded and clouded with black and greyish-brown. Quills tipped with white; the wing- and tail-coverts spotted with the same. On the body reflexions of purple and bronze. Tail crossed by a double bar of light ochreous brown clouded with brown, narrowly tipped also with same." (In the more mature specimen above mentioned the narrow middle bar is the only one that remains complete.) "Under wing banded with clouded white. Under tail black, banded with clouded ochre." (The maturer bird shows the one band nearly white, with white tips to the under tail; the more basal band hidden beneath the under tail-coverts is nearly obsolete.) "Axillaries and lower parts yellowish-brown, mottled, chiefly on the latter, with black, and ocellated, thickly and more purely on the former, with white edged with black."

"♀ with a shorter and more worn bill. Has a lighter plumage. Her wing is worn, and has fewer spots. The basal band of the tail has nearly disappeared, and the central band approaches nearer the roots of the tail. Her under wings have wider bands of white. She appears to be an older bird than the male. Length 30 inches, tail 13, tarsi 4·5.

"Sternum Aquiline, with convex posterior edge, and one oval hole on each side; scapulars broad."

Mr. Gurney must have long ago received the pair from Tamsuy together with my descriptions, but I have not yet learned his opinion as to the validity of the species. I have followed the custom prevailing in this genus of naming the species after its local name.

Besides the specimen procured near here (Takow) in January 1866, I received in December 1865 an immature bird, also from the southern mountains. I now give the notes I have made on this.

"*Spilornis hoya.* Immature, from the Fungshan Mountains, procured November 1865. Length 28·5 inches; wing 19·3; tail 12·25; tarsus 4·4, feathered down the front for 1¼; middle toe 1·4, its claw ·9; hind toe 1·1, its claw ·1; outer toe smaller than inner, with small claw; inner toe robust, with claw as large as that on hind toe. Legs yellow, claws black. Crown and occiput white, tipped with blackish-brown; the occipital plumes much longer than in the adult. Moustache, eyelid, and auriculars blackish-brown. Tail with two brown cream-mottled cross bands about an inch in width, and indications of a third bar near its base hidden by the tail-coverts; rectrices tipped with cream-colour. Under tail black, the bars showing through brownish white; near its roots the under tail is barred and mottled with whitish. Under parts dingy cream-colour, streaked on the breast with blackish-brown, and more faintly on the flanks and abdomen. The vent and tibials washed with buff, and prettily barred with buff-brown shaded with black. Axillaries white, varied with reddish-brown. A good deal of white occurs on the underwing. On the primary and tertiary under-coverts the peculiar *Spilornis*-style of spots are showing themselves. Upper parts deep hair-brown, shot with purplish-pink; the feathers on their concealed halves whitey-brown, with more or less pure white. White margins to the higher tail-coverts, and brown to those in immediate proximity with the tail. All the small and large wing-feathers are more or less tipped with white, and some of the coverts are a good deal marked with it. Quills hair-brown, banded with blackish-brown, the latter showing through on the under wing, while in the former there appears whitish brown; fourth quill longest, first 4·3 inches shorter than it; first four quills pointed at tip and narrowed. The light bands on the basal half of the quills give place to more or less white on the inner webs, which extends more towards the tips on the tertials. This white shows through, and gives the whiteness to the under-wing. The plumage in this stage is very Osprey-like, especially so in the aspect of the head. The Chinese insist upon its being a large kind of *He-pew* (Fish Tiger), their name for the common Osprey (*Pandion haliaetus*)."

"*Scops japonicus,* Schlegel. Procured at Tamsuy, 29 March, 1864. This is the peculiar rufous form, known from India as the *Scops sunia,* Hodgs. Wing 5·8 inches; four first quills somewhat indented on inner web, fifth the longest; tail of twelve soft feathers, 3·5 inches long.

"*Ampelis phœnicoptera* (Temminck), ♀. Shot at Tamsuy, 17 April, 1864. Length 7·5 inches; wing 4·3; first quill slightly shorter than the second, which is the longest in the wing; tail of twelve feathers, nearly equal, 2·4 inches in length. Bill black. Iris blood-red. Inside of mouth flesh-coloured, slightly ochreous. Mouth broad; tongue rather broadly sagittate, bifid at the tip. The black runs round the bill, and passes the eye in a broad facial band, borders the conical crest, and makes a large spot on the chin. Feathers at base of lower mandible at their roots white, their tips burnt-sienna; they form a broad side-fringe to the black chin-spot. Forehead also burnt-sienna, blending into the light hue of the crest. Legs and claws black, flesh-coloured on their sides. Proved to be a female by dissection; very thin; a few seeds of a species of *Rubus* in its gizzard.

"*Ninox japonicus* (Schlegel), ♀. Shot at Tamsuy, 17 April, 1864. Length 10·8 inches; wing 8·5; first quill 1·5 shorter than the second, which is ·7 shorter than the third, which is ·1 shorter than the fourth, the longest in the wing; first four quills deeply indented on edge of inner web; tail of twelve feathers, slightly graduated, 4·4 inches, the outer ones being about 2·5 inches shorter than the middle ones. Bill blackish, with the culmen and greater part of lower mandible light greenish-yellow. Inside of mouth bluish flesh-colour; apical half of tongue horny and of a pale yellowish-blue. Iris deep yellow. Naked feet bright orange-yellow or golden, and covered with black bristles; claws black, paler at their bases. Proved to be a female by dissection; fat and greasy. Stomach full of remains of *Melolonthæ* and other insects, chiefly *Coleoptera.*

"*Euplocamus swinhoii,* Gould. I have seen many males with a plumage intermediate to that of the adult of their own sex and that of the females. This plumage is carried through the winter; but it varies in its resemblance to the one sex or the other. I thought at first that such birds were melanite varieties, especially as the Chinese distinguished them by a distinct name, *Aw-bay-kak* (black-tailed male); but I consider now that they are only young males in the transition-plumage, which they carry till the next vernal moult. In this respect they would appear to differ from the true *Phasiani,* which burst full-blown into the adult costume at their first moult in the autumn after they appear in the world."

Now I will drop Tamsuy and the past and speak of this vicinity and of my late acquisitions. From the southern mountains I received, in December 1865, a new species of Titmouse of the *Parus major,* L., type, and closely allied to *Parus monticolus,* Vigors, of the Himalayas. It is a very lovely species.

PARUS INSPERATUS, sp. nov.

Similis *P. monticolo,* sed minor; uropygio cinereo nec dorso concolore; axillaribus, tibiis crissoque albis, nigro variis; collo sub gutta alba nuchali postice flavo.

Long. tot. 4·5, alæ 2·6, caudæ 1·8 poll.

Habitat in montibus Formosæ meridionalibus.

Head, sides of neck extending to back, under neck, and median line of under body blue-black, with purple reflections on the three first. Cheeks, nuchal spot, broad tips to primary coverts, axillaries, half of under wing, outer side of tibiæ, and broad tips to crissum white. Below the nape-spot and under parts fine bright yellow. Back and scapulars bright yellowish-green. Rump and flanks bluish-cinereous. Primaries blackish brown, fringed near the base with French-blue, and tipwards limned with white. Secondaries and tertiaries blacker, edged with blue and tipped with pearly white; the latter more conspicuously tipped. Shoulder-coverts bluish-grey; the rest of the coverts black, broadly margined with pearly-white and grey. Axillaries and tibials white, varied with black. Basal portion of vent-feathers black. Tail greyish-black, broadly edged with French-blue and tipped with white, the white increasing on the laterals; on the outermost it covers the apical third of the inner and two-thirds of outer web. Bill black. Legs and claws deep plumbeous. Tail somewhat graduated, having the outer feathers ·3 inch shorter than the middle ones. Fourth, fifth, and sixth quills nearly equal, and longest in the wing. Winglet deep brown, edged with greyish blue, and without any white.

The next novelty I have to describe was brought to me from the hills in January of this year. I find it to be one of my oldest Formosan acquaintances, having met with it on the hills at Hongshan below Tamsuy so long ago as March 1856, when on an adventurous visit to this island in a Portuguese Lorcha. I then found the little fellow's nest, well observing the bird to be like a *Zosterops* with a red crown. In later years, as I did not meet with the bird again, I tried to reconcile it with one of the species I had succeeded in procuring; for, be it known, the owner of the cup-shaped nest with pretty blue eggs proved himself too lively and cautious for my slow marksmanship. I pitched upon the *Calamoherpe minuta*, mihi, as being somewhat of the same size and having reddish on the crown. I felt so sure of this identification being correct, that in my paper on Formosan ornithology (Ibis, 1863, p. 306) I assigned the nest and eggs of my doubtful acquaintance without a comment to said known species. When my hunter brought me the right bird the other day, one glance sufficed to recall all, and in one leap before my vision appeared the brush-clad hills of Hongshan as they appeared ten years ago; I saw the deep cup-shaped nest with the small Redstart-like eggs, and I heard the short rattling chirp of the small "Redcrown" as I in vain dodged after him with my gun. I have no further doubts on the subject; and the whole clause, therefore, beginning from "It suspends" to "moves away," instead of referring to *Calamoherpe minuta*, will be known henceforth to refer to my long-lost acquaintance, which I now beg leave to introduce as

STACHYRHIS PRÆCOGNITUS, sp. nov.

Olivaceus, cauda alisque fuscioribus; coronæ plumis crispis, semierectis, rufis; gula tenuiter striata et cum pectore ventrisque medio sordide aureis; carpis axillaribusque flavescenti-albis; rostro pedibusque plumbeis.

Long. tot. 4·1, alæ 2·2, caudæ 1·6, tarsi ·7 poll.

Bill plumbeous, very like that of *Zosterops simplex*, but longer. Legs Timaliine, long and strong, light plumbeous-brown, with a wash of yellow, especially on the nails. Feathers of the crown somewhat stiff, semierect, and dull flammeous, glistening in the light. Eyelid black. Iris reddish hazel. Above olivaceous, browner on the wings and tail, which have their stems and inner webs deeper-coloured; the two central rectrices the same on both webs, and all the tail-feathers faintly barred. Under parts dingy golden, olivaceous on all but the throat, breast, and middle of belly. Axillaries white, tinged with yellow, especially on the carpal edge. The inner web of many of the quills more or less edged with white tinged with yellow, making a partly whitish under-wing. Vibrissæ few at gape, but numerous and black on chin. Throat with a few black streaks. Claws curved, blunt, and laterally cultrated; outer toe longer than inner; hind toe and claw large. The third and onward quills broad; first to fourth graduated; fifth to seventh nearly equal and longest; first shorter than longest, about ·8. Rectrices twelve in number, broad and graduated, outermost about ·4 inch shorter than the middle ones. General feathers soft and fluffy. Bill nearly ·5 inch, straight and Zosteropine. In the striation of its throat, and in many other respects, this species seems to bear relation to *Mixornis rubicapillus*, Tickell; but the bill of that is more Turdine. Its closest ally is *Stachyrhis chrysea*, Hodgson (Jerdon, 'Birds of India,' ii. p. 23), with which in company it might be ranked under a distinct genus, and not associated with the other species of *Stachyrhis* as at present constituted; but where the new genus should stand is not so easily settled. This species certainly has affinities with *Myzornis*, *Herpornis*, *Zosterops*, and *Iora*; but I shall content myself, for the present, in leaving it along with *S. chrysea,* to glory as a troublesome and aberrant form among the Babbling Thrushes; for, barring its head, the rest of its build, its habits, and the colour of its eggs are in accordance with those of *Garrulax,* and point to a kinship, however distant, with that multiform group.

On the 5th of June, 1865, I received some male Green Pigeons from the Fungshan Mountains (Takow is in the Fungshan district). I thought I had got in them the male of my *Treron formosæ,* which species I had created on a single female procured at Taiwan in 1860 (Ibis, 1863, p. 396). I described the bird in one of my late papers [*anteà,* p. 122], noting that the species was not a true *Treron,* but, from its long, broad, wedge-shaped tail, a *Sphenocercus.* I left my single type-specimen in England; but I have now received a male of the true *Treron formosæ* from the Kia-e district, and several of both sexes of the same from the Fungshan district. It is incumbent on me therefore to correct my hasty error, and to describe now the true *Treron formosæ* male. The *Sphenocercus* I should like to stand as *S. sororius,* from its close affinity to *S. sieboldi,* Temminck, of Japan, from which, on reading the description of that bird in the 'Fauna Japonica,' I find it to differ in the following characters:—Its upper back is only tinged with grey, instead of being deep grey; its greater wing-coverts and tertiaries are edged with pale primrose; but its chief difference is in the blackish-grey of its lateral tail-feathers. The size of the two species would seem to run very close; and I would hesitate to make a distinct species of our bird without actual comparison of specimens, were it not a known fact that species of this group usually enjoy a very limited range.

SPHENOCERCUS SORORIUS, mihi ["*S. formosæ* ♂," Ibis, 1866, p. 122, nec *Treron formosæ,* Swinh. *op. cit.* 1863, p. 396], ♀, is grass-green on the forehead and under neck. Her upper parts are of a duller and browner green, and devoid of the blue-grey on the back and maroon-chestnut patch on shoulders and wing-coverts. The third quill of this species is sinuated on the edge of the inner web, as in most Treronine Pigeons. Dr. Jerdon, however, says that such is not the case with the Indian members of the genus *Sphenocercus*. The female is of much the same stature as the male, but not quite so robust, and has the wing about half an inch shorter.

Treron formosæ ♂ (vera). Upper parts olive-green, brighter on the rump and tail, as in the female (in 'Ibis,' 1863, p. 396, "*yellow* on the head and rump" is a misprint for "*yellower* on the head and rump"). Neck, upper back, face, breast, and belly light grass-green, greyest on the second of these, and yellowest on the face and underparts. Crown smeared with ochreous-buff. Shoulders and lesser coverts deep chesnut-maroon, extending faintly in a broken semicircle across the back. Axillaries and under wing leaden-grey. Tibials deep green, some of the feathers being broadly margined with primrose. Centre of the belly also primrose. Under tail-coverts extending to within half an inch of the end of the tail, primrose, washed with cinnamon, and broadly centred with deep green, especially on the more basal feathers. The feathers of the body on their hidden parts leaden-grey, white at roots. Legs and bill as in female. Quills greyish-black, a few of the outer ones edged faintly with greenish, the outer quill being slightly serrated on its outer edge. Outer tertials greyish-black, narrowly edged with green and light yellow; the rest of the tertials the colour of the back. The primary coverts with more or less greyish black, margined with yellow. Tail olivaceous grass-green, stemmed with greyish-black; all the rectrices but the middle pair broadly margined interiorly with greyish-black, and lightly smeared on parts with the same. The rest slightly graduated, the outermost being ·5 inch shorter than the centrals. Tail 5 inches long, consisting of fourteen rectrices. Total length of bird 12·5 inches; wing 7·8, the third quill deeply festooned on its inner margin about middle of its length. I cannot find anything in the 'Birds of India' like this Pigeon; and I am not sufficiently acquainted with this group to tell if it has a close affine. It may perhaps be nearly matched from the Philippines.

I have a third species of *Treron* from the Fungshan Mountains, but unfortunately only a single female specimen of it. Its distinctness is marked; and on account of its cry, which the Chinese compare to the *Aw-a* shouting of their ladies to summon the swinish herds from their rambles about the streets to the troughs to be fed, I name our bird

TRERON CHŒROBOATIS, sp. nov.

The female has the belly white, the lateral rectrices black tipped with green, the two middle pair somewhat sinuated on the edge of the webs within ·75 inch of their tips, and protracted beyond the rest, the longest about ·5, the next about ·2. It is impossible to guess what the male will be like. The bill of the female bird is a trifle smaller; but otherwise, with the exception of the above-noted differences, she resembles the female of *Treron formosæ*.

On the 27th of January, 1866, from the same mountains was brought to me a Cushat or Wood-Pigeon, which answers in every respect, both of colour and size, to *Palumbus pulchricollis*, Hodgson, of Nepal, as described by Dr. Jerdon (Birds of India, iii. p. 465). I have no specimens from India to compare with mine, and therefore cannot state that it is positively identical, and has not varied at all from isolation. But it is an important fact that in India an allied form, *P. elphinstonii* (Sykes), should occur, and yet that at this distance the species should recur in apparently its entire originality. It adds one more valued addition to the numerous other cases indicating the strong affinity of our mountains with those of the distant Himalayas. The claws of our bird are *yellowish*, and not *yellow* as stated by Dr. Jerdon. The Chinese of the interior call this Pigeon the *Swa Hwun cheaou*, or Hill-Pigeon, and say it only appears when rice is scarce.

I received at the same time with the last quite an immature specimen of a Dove of the *Turtur rupicola* type. If it be, as I take it, identical with this species, we shall learn from it that *T. rupicola* breeds in Formosa, and also that it participates in the peculiar habit of many other Doves, of nesting sometimes in the depth of winter.

From Choloshan (Central Formosa) I have a small Flycatcher, shot in October. It answers in every respect to that figured in Middendorff's 'Sibirische Reise' (plate 17) as *Muscicapa luteola*, identified by him (page 186) with Pallas's *Motacilla luteola.* Middendorff's single specimen was a male, shot on the 8th of June, and we may therefore suppose it to be in summer plumage. By our bird, which was procured in winter, we see that there is no difference in the plumage of that season. If, then, Middendorff's specimen was truly a male, the species cannot be identified with *M. mugimaki* of the 'Fauna Japonica,' which has the back black and more white on the wing. Neither is it the *Motacilla luteola* of Pallas; for in the 'Zoographia Rosso-Asiatica' (i. p. 470) this species is described "supra cinerea (my bird is olive-green on the upper parts), subtus albida, gula colloque ferrugineis, rectricibus lateralibus medio transversim albis." Pallas never saw the bird, but described it from Messerschmid's notes, and this latter speaks of the species as "chryso-bronchites albicilla." After a careful perusal of the whole of Pallas's article on this subject, I feel convinced he is speaking of the male of *Erythrosterna parva* (L.), which is the western form of *E. leucura* (Gmelin), and is distinguished from it by the greater extent of orange on the throat and breast. The latter appears to be the Chinese race, but both are said to have occurred in India. Pallas's *Motacilla albicilla* (Z. R.-A. i. p. 462) is the winter plumage of one of the two allied forms; but of which, it is difficult to determine. I cannot tell how in the winter-garb the two are to be differentiated. The latest name for our species would seem to be *Muscicapa erythaca*, Blyth. Mr. Blyth tells me that he founded this species on a single specimen procured at Penang. I procured a single specimen some years ago at Amoy, which I described as *M. hylocharis* (Ibis, 1862, p. 305). This had no white at the base of the rectrices. I dissected it, and considered it a male at the time. Von Schrenk (Reise u. Forsch. Amurl. i. p. 2, tab. xiii. fig. 1) figures a young bird having the white in question. Mine may have been a variety, or a female. One with the white was shot by Mr. Gustav Schlegel at Amoy. I do not know where Mr. Blyth published his description of the Penang bird, but I should not be surprised if it proved to be distinct, and that our bird were without a name.

Pallas's *Muscicapa grisola*, var. β, seems identical with *M.*

latirostris, Raffl., of China, and not with my *M. griseisticta*; for Pallas speaks of it as having no spots on the breast, and of *M. albicilla* nearly equalling it in size.

While on the subject of Russian ornithologists, it will be as well to mention that in glancing over Radde's 'Travels in South-east Siberia' I recognized a familiar friend on his Plate X. His *Lusciola cyane* (Pall.) is our *Larvivora gracilis* from Amoy and Tientsin. Unfortunately the Himalaya bird stands as *L. cyana,* Hodgson. Hodgson has named the female *L. brunnea*; but the name is not apt; we must therefore, I suppose, take Dr. Jerdon's name *superciliaris* for the Indian, and preserve Pallas's for the Chinese species.

What does Dr. Sclater say to Radde's Plate VIII? Does he consider it to show that his *Turdus naumanni* is identical with *T. ruficollis**.

But I must continue with my Formosan ornithology.

Turdus albiceps, ♀. Skins brought from Central Formosa (Choloshan). Bill and legs brown. Crown deep brown. Feathers at base of culmen, lores, and fore part of eye-streak light buff-brown. Rest of eye-streak, indistinct nuchal band, and under neck white, the latter somewhat spotted, chiefly on the sides, with small black arrow-heads. Cheeks varied with buff and black. Upper parts deep olive-brown, washed on the back with buff. Wings the same; primary coverts tipped with brownish buff, and primaries edged paler. The upper tail-coverts, dorsals, and scapulars faintly barred. Tail deep olive-brown. Underparts as in male, but lighter. Wing 4·25 to 4·3 inches.

Goatsuckers may be seen any evening at this season, skimming about at dusk at the foot of Apes' Hill. I beat out a couple of males from some bushes in my garden on the 19th of January, and shot them both. As I have before only given the female, I will now give

Caprimulgus stictomus, ♂. Length 10 inches; wing 7·5; tail 4·7, of ten feathers; lateral tail-feather about three-tenths shorter than the rest, which are nearly equal. Wing reaches to ·8 inch from end of tail. Bill flesh-coloured, apical half blackish brown. Skin round eye ochreous. Legs and feet fleshy-brown, whitish on joints and soles; claws black, the comb on central claw whitish. Inside of mouth flesh-coloured. Ear-covert large, nearly as big as the immense eye, which is ·4 inch in diameter. First quill about ·4 inch shorter than the second, which is ·1 shorter than the third and longest. First four quills white about their middle, the spot extending over the inner web only of the first, including the edge of its shaft, running right across the second and third, and occupying the fourth, except on the edges of the outer and inner webs. The two outer tail-feathers on each side pure white, obliquely tipped with brown, more strongly on outer lateral, the margins of both being limned all round with light buff. A large pure white spot occurs on each side of the throat. The male shows this species to have very close affinity with *C. monticolus* of India; and until I have the opportunity to compare ours with the individuals of the same sex of its ally, I shall not be certain of its specific distinctness. It was on the view of a female from Amoy that Mr. Blyth recommended me to separate it.

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* [The reviewer of Herr Radde's work (Nat. Hist. Rev. 1865, p. 462) considers that author to be wrong in this identification.—Ed.]

I have many more jottings in my journal for January 1866, but I fear I have already reached the length of an ordinary article. I must therefore hastily conclude. I am off to the mountains.

Takow, 1 February, 1866.

XXVI.—*On the* Muscicapa melanictera *of Gmelin*.

By the Viscount Walden, F.L.S., F.Z.S., &c.

Forming part of a large collection of birds recently made in the island of Ceylon by my friend Mr. Spencer Chapman, are three skins of Le Vaillant's "*Cap Nègre*," a species whose correct systematic title has not hitherto been satisfactorily determined. In the hope of being able to refer that species to its oldest specific designation, I trust that a few observations on the subject will not be unacceptable to the readers of 'The Ibis.' Before, however, entering into the history of this bird, I will give a short description, taken from the specimens I have just received.

The entire head, nape, and cheeks intense, yet unglossed, black; remainder of the whole upper surface of the body yellowish olive-green. Margins of the outer webs of all the wing-feathers more or less of the same colour, the outer edges of the primaries being somewhat yellower. Quills and rectrices hair-brown; inner margins of all, except the first primary, edged with yellowish-albescent, increasing in extent with every succeeding quill, commencing with the second. Upper surface of the tail brown, as in the quills; middle rectrices faintly edged with the olive-green of the upper plumage, external pairs more decidedly so; under surface of rectrices pale brown, all with white or albescent terminal bands, the middle pair excepted. Entire under surface rich saffron-yellow, purest on the chin, throat, abdomen, and under tail- and wing-coverts. Wing 3·75 inches; tail 3·25 inches. Iris brown in the female. Bill and feet black. The upper and under tail-coverts are very much developed; the first covering fully half the basal portion of the tail, the last extending even further.

Le Vaillant described his "*Cap Nègre*" from six individuals sent to him from Ceylon; and the specimens received by me from the same island agree entirely with his description. Although the examples were sent to him in the flesh, Le Vaillant tells us that he was unable, on moistening the bodies, to discriminate the sexes, in consequence of the decayed condition of the organs. A seventh specimen in the same collection he regarded as the female, as it only differed from the other six in the shade of its colouring, the head being brown instead of black, the upper plumage isabelline-yellow rather than olive-yellow, the under surface pale yellow; and also by being somewhat smaller in size. These two forms are represented in his plate 140, the colouring of the figures having been either originally very dull or else having since become faded; the distribution of colour is accurately enough given. Upon "*Le Cap Nègre*" Vieillot founded his *Ægithina atricapilla*, he having instituted the genus *Ægithina* in the 'Analyse' (1816) for the reception of his *Sylvia leucoptera**. In the 'Nouveau Dictionnaire' he introduced *Le Cap Nègre* as the first species of the genus, associating it with *Le Quadricolor,* Le Vaillant (*Motacilla zeylonica,* Gm., *Æ. quadricolor,* Vieill.). He apparently had no better or other reason for thus uniting under the same genus these two dissimilar forms, than the fact that the plates representing the two birds succeeded one another in Le Vaillant's great work. Drapiez followed suit; for while giving our bird another specific name, *nigricapilla,* he referred it to Horsfield's genus *Iora,* which was founded on the Javan form of *I. typhia* (*I. scapularis,* Horsf.). In the Catalogue of the Calcutta Museum, Mr. Blyth removed *Æ. atricapilla,* Vieill., to the genus *Pycnonotus,* Kuhl; but later, in the addenda to Appendix II. of that Catalogue, he suggested that Drapiez's specific title would have to stand in preference to Vieillot's, as the *Muscicapa atricapilla,* Vieill.* (Sonnerat's *Gobe-mouche à tête noire de la Chine*), was also a *Pycnonotus.* If it were necessary, upon the grounds of priority alone, to decide the point of precedence, this last name, instead of having to be preferred, would have to give way, as it was published in 1818, two years later than that of *Æ. atricapilla,* Vieill. But the two species are generically separable, and the priority of their specific names cannot come into conflict, *M. atricapilla,* Vieill., belonging to the group of which *Muscicapa hæmorrhusa,* Gm., is the type, while *Æ. atricapilla,* Vieill., belongs to the same genus as *Turdus dispar,* Horsf., and *Brachypus rubineus,* Jerd.,—the first being the type of *Brachypus,* Sw., the last of *Rubigula,* Blyth. However, in framing his 'Catalogue of Ceylon Birds,' Kelaart adopted Drapiez's specific title, introducing *R. gularis* (Gould) into the list as an additional species.

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* The genus *Ægithina* would take precedence of *Iora*, Horsf., if it could be satisfactorily demonstrated that the *Fauvette leucoptère*, Vieill. (Ois. de l'Am. sept.) was based upon a specimen of *Motacilla tiphia*, L.

In 1835, under the name of *Brachypus gularis,* Mr. Gould described a bird said to be from Travancore. The description given agrees in every respect with my Ceylon specimens, and consequently with *Le Cap Nègre.* A few years later, Dr. Jerdon, in his 'Catalogue of the Birds of Southern India,' described a short-footed Thrush from Malabar, under the title of *Brachypus rubineus,* which species, in the distribution of the colouring, and, indeed, in the actual tints of the upper surface of the body-plumage, very closely resembles my Ceylon specimens; but it is of a somewhat smaller size, and the coloration of the under surface, as well as that of the wings and tail, is very different. The chin is black, the throat a bright flame-coloured orange, and the remainder of the under plumage is more of an orange than a saffron-yellow. The quills and rectrices are olive-brown, and much paler than those of my Ceylon specimen, and the white terminal caudal band is wanting. Dr. Jerdon gave a good figure of this bird in his 'Illustrations of Indian Ornithology' for 1846, at the time suggesting that his might be the same bird as Mr. Gould's *B. gularis,* and remarking that although Mr. Gould had omitted a description of the throat, it was probably through error, "as the specific name is derived therefrom." Now this was merely a surmise of Dr. Jerdon, and did not rest upon a comparison made between the two types. To me it appears improbable that the most prominent feature in *B. rubineus,* its bright orange throat, should have been omitted in Mr. Gould's diagnosis. The name *gularis* might most appropriately have been given to a specimen of the Ceylon bird; for in it the yellow of the throat is very much narrowed by the black of the bordering cheek-plumage, and contrasts, by its greater purity, with the more olive-yellow of the breast. Anyhow, as Mr. Gould's description does not resemble *B. rubineus,* Jerd., in its most essential character, and does agree in every respect with *Le Cap Nègre,* I am obliged to make it a synonym of the latter species; and when we consider the number of Malabar species that also exist in Ceylon, the supposed Travancore origin of Mr. Gould's type is not an insuperable objection to such a reduction. I also see that Mr. Gray, in his 'Genera of Birds,' keeps *B. gularis,* Gould, and *B. rubineus,* Jerd., distinct, while Sundevall makes *B. gularis,* Gould, a synonym of *Le Cap Nègre.*

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* This species has been figured in the 'U. S. Japan Exp.' (vol. ii. p. 241, pl. 6, Orn.) under the title of *Ixos hæmorrhous* (Gm.), Mr. Cassin having regarded it as the true *Muscicapa hæmorrhusa,* Gm. Gmelin's species, however, was based upon the "*Red-vented Flycatcher*" of Brown's 'Illustrations,' which comes from Ceylon. An extensive series of specimens of this species is contained in the collection I have just received. They in no way differ from Malabar and South Indian examples.

In a synopsis of the *Brachypodinæ,* published in the 'Journal of the Asiatic Society of Bengal' (for 1845), Mr. Blyth had adopted Dr. Jerdon's view of the identity of the two species; in this he was followed by Prince Bonaparte in the 'Conspectus.' And in the 'Birds of India' Dr. Jerdon has continued to regard them as identical, but for no better reason, so far as I can discover, than his original surmise above mentioned. A year later Mr. Blyth, in the same journal, gave a description of a specimen he had received from Ceylon, evidently, by his account, identical with the *Cap Nègre*. To this species, while extremely doubtful whether it might not prove to be the female of *B. rubineus*, Jerd., he gave the provisional name of *aberrans*. In the 'Catalogue of the Calcutta Museum,' Mr. Blyth correctly reduced this name to a synonym of *Æ. atricapilla*, Vieill., thus ceasing to regard it as a female bird; at the same time he allowed Dr. Jerdon's *rubineus* to rank as a distinct species. In his 'Ornithology of Ceylon' Mr. Layard recorded it as *Pycnonotus atricapillus*. In the Supplement to the 'Genera of Birds' Mr. Gray gave the specific name of *monachus* to Vieillot's *Ægithina atricapilla*, and made it a *Parus*; and Prince Bonaparte, in 1854, made the same species the type of his genus *Meropixus*, he having previously erroneously referred it to Swainson's African genus *Parisoma*.

But long before Le Vaillant published his plate and description of *Le Cap Nègre*, Brown had figured and described a bird, procured in Ceylon by Governor Laten, under the name of the "Yellow-breasted Flycatcher." His words are these:—"Head and cheek black. Back and coverts of wings cinereous brown, dashed with yellow. Primaries and tail dusky, edged with pale yellow. Breast and belly of a fine yellow." The figure, although wretched in an artistic sense, represents a yellow bird with a black head and black cheeks, and with white tips to the under surface of the rectrices. Upon this figure Gmelin founded his *Muscicapa melanictera*, a species we find admitted by many subsequent authors, but by none identified. Prince Bonaparte, as far as I have been able to discover, is the first author who referred it to a known species; and he, singularly enough, made it a synonym of Gmelin's *Motacilla* (*Iora*) *zeylanica*. Now this species was also founded by Gmelin on one of Brown's figures, the "Ceylon Blackcap" of his 'Illustrations;' and, apart from the extreme improbability of Brown having described and figured the same bird twice over in the same volume, or that Governor Laten, a good naturalist, should have regarded specimens of the same species as belonging to two different species, the figures and descriptions do not agree with one another. The figure of the "Ceylon Blackcap" represents that bird with yellow cheeks, while that of the "Yellow-breasted Flycatcher" represents them as black. In the first bird the two characteristic white alar bars of *Iora zeylanica* are distinctly shown, in the other the wing is uniform in colour. Lastly, the white terminal caudal markings represented in the figure of the "Yellow-breasted Flycatcher" distinguishes it at once from *I. zeylanica.* It must be borne in mind that it is universally admitted that Brown's "Ceylon Blackcap" is an *Iora.* If we compare the two descriptions, we find internal evidence which makes it impossible to believe that they are taken from the same species. Brown's description of the "Yellow-breasted Flycatcher" agrees in all respects with my Ceylon specimens, and they equally resemble Le Vaillant's account of the *Cap Nègre.* With perfect confidence, therefore, I propose to restore *Muscicapa melanictera,* Gm., to a place in our catalogue of real and distinct species, and to expunge Vieillot's title of *atricapilla.*

In this view the synonymy of this species will be as follows:—

RUBIGULA MELANICTERA (Gm.).

Yellow-breasted Flycatcher, Brown, Illust. 80, pl. xxxii. fig. 1, 1776; Lath. Gen. Syn. iii. 336. no. 21, 1783; Gen. Hist. 187. no. 50, 1823.

Muscicapa melanictera, Gmel. S. N. i. 941. no. 55, 1788; Lath. Ind. Orn. ii. 475. no. 28, 1790.

Le Cap nègre, Le Vaill. Ois. d'Afr. iii. 172, pl. 140. fig. 1, 1802.

Ægithina atricapilla, Vieill. N. Dict. i. 176, 1816.

Le Gobe-mouche Malkola-Kourla, Vieill. xxi. 473, 1818.

Black-capped Tanager, Lath. Gen. Hist. vi. 38. no. 49, 1823.

Gobe-mouche noir et jaune de Ceilan, St. Croix, Dict. Sc. Nat. xxxiii. 85, 1824.

Brachypus gularis, Gould, P. Z. S. 1835, p. 186.

Parus monachus, Gray, Gen. of Birds, Sup. App. 306. no. 192, App. 39. no. 140, 1849.

Iora nigricapilla, Drapiez, Dict. Class. Sc. Nat. vi. 170, 1840.

Rubigula aberrans, Blyth, J. A. S. B. 1846, p. 287.

Sylvia atricapilla, Drapiez, apud Blyth, Cat. Mus. A. S. B. xxiii. in not., 1849.

Pycnonotus atricapillus, Blyth, Cat. Mus. A. S. B. 211. no. 1276; Layard, Ann. N. H. 1854, xiii. p. 125. no. 119; Sundev. K. Sv. Vet.-Ak. Hand. 1857, p. 40. no. 140.

Parisoma monacus, Bp. Consp. 259. no. 3, 1850.

Pycnonotus nigricapillus, Drapiez, apud Kelaart, Prod. Zey. 112, 123, 1852.

Rubigula gularis, Gould, apud Kelaart, *l. c.*

Meropixus atricapillus, Bp. Notes Ornith. 1854, p. 40, in not.

All the specimens of this bird sent to me had been ascertained by dissection to be those of females; the livery of the male, therefore, still remains a matter of conjecture. As we have seen, Mr. Blyth's first impression was that the state of plumage I have described was that of the female of *Brachypus rubineus*, Jerd., from Malabar. He eventually changed his opinion, but upon what grounds he has not stated. But while feeling confident that this Ceylon bird is not the female of *B. rubineus*, it is just possible that the males may wear a different livery. The form attributed by Le Vaillant to the female, and figured by him as such, may have been that of a young bird or of a distinct species, or, not improbably, it may have been invented for the occasion; for my specimens prove that authenticated females wear the dress which Le Vaillant has figured as that of the male. The female of *B. rubineus*, Jerd., has not been described by any of the Indian ornithologists; neither has the female of *Turdus dispar*, Horsf., been absolutely recognized, for Temminck says that the individuals sent to Leyden as the females of that species may only have been males in young plumage. The description given of them by him leads me to the same conclusion. If we judge by analogy, we have no reason to anticipate any difference of plumage in the two sexes of any member of the *Pycnonotinæ*.

M. melanictera appears to me to belong to the natural genus *Rubigula*, founded by Mr. Blyth in 1845 (J. A. S. B. p. 576) for the reception of *B. rubineus*, Jerd., and coequal with *Brachypus*, Sw., of 1831, founded upon the *T. dispar*, Horsf. Swainson's genus, having been previously employed, must fall; and although Cabanis's term *Sphagias*, coined six years later, may be more appropriate, the stern law of priority obliges us to discard it, as well as, for the same reason, that of *Meropixus*, Bp., published in 1854, and formed for the reception of our Ceylon bird, *M. melanictera*.

The following species appear to me to come within the limits of *Rubigula*:—

1. *Brachypus rubineus*, Jerd. Ill. Ind. Orn. 1846, pl. 37.
2. *Turdus dispar*, Horsf. Linn. Tr. xiii. p. 150.
3. *Vanga flaviventris*, Tick. J. A. S. B. ii. 583, 1833.
4. *Muscicapa melanictera*, Gm.

Lanius melanocephalus, Gm. (*Turdus atriceps*, Temm. Pl. Col. 147, type of *Brachypodius*, Blyth, 1845), is very closely allied, but differs in having the tail rounded instead of subquadrate; and near it must probably be placed *Ixus chalcocephalus*, Temm., Pl. Col. 453. fig. 1, while *Ixus squamatus*, Temm., fig. 2, may perhaps form a fifth additional species of *Rubigula*.

XXVII.—*Letters, Announcements, &c.*

We have received the following letters, addressed "To the Editor of 'The Ibis:'"—

April 23, 1866.

Sir,—The fact to which Mr. T. R. Archer Briggs draws attention in the last Number of 'The Ibis' was already noticed by me (Ibis, 1864, p. 133). I hope this circumstance will impress on the minds of all readers of that Journal the importance of possessing a complete series of it.

I am, Sir, your obedient Servant,

J. W. P. Orde.

Willesden, Middlesex, June 8, 1866.

Sir,—As Mr. A. G. More mentions (Ibis, 1865, p. 123) that he has no record of the Grey Wagtail (*Motacilla sulphurea*) nesting in North Wales, and as Yarrell (B. B. i. p. 434), quoting Mr. Eyton, says that it is a *winter visitor* there, I beg leave to state that this year, from May 28 to June 4, I found it by no means rare, and evidently breeding, on the streams in the neighbourhood of Beddgelert, and also Rhiwbryfdir, in subprovince 18. In that subprovince I found about 40 species breeding, among which are the Tawny Owl and the Pied Flycatcher. The nest of the former was *on the ground,* in a wood of pines and beeches, and contained three eggs highly incubated; that of the latter was about ten feet from the ground, in the end-wall of a small stone-built cottage in a wood; and I think it contained young ones, but this I was unable to ascertain positively.

I am, Sir, yours, &c.,

CHARLES BYGRAVE WHARTON.

In a letter lately received from Mr. C. J. Andersson, dated "Cape Town, December 8, 1865," that gentleman writes to us:—

"I believe I have got a clue to the mystery about the young Albatroses (Ibis, 1865, pp. 279–281); I mean as to how they are supported during the absence of their parents, and while they are yet unable to fly. I will relate the incident that led to the discovery (if such it be) as it occurred:—'What do you know, Captain B.,' I said one day to an intelligent master of a sealing-vessel, from whom I have obtained many valuable data about sea-fowl—'what do you know about the Albatroses? how are the young, for instance, fed after being abandoned by the parents?' 'Why, of course,' was his prompt reply, 'they live *on their own fat.*' 'On their own fat!' I exclaimed; 'how do you *prove* that?' 'Because,' answered he, 'in the first place they are excessively fat at this season; secondly, they could not possibly in many instances get down to the water without being able to fly, and that they can't do; and thirdly, the common "Jackass Penguin" [*Apterodytes demersa*] will live two months on shore without a morsel of food. I have seen them come on shore a mass of fat, and leave the land a mere skeleton. But you can't think, Mr. Andersson,' my friend wound up by saying, 'how fat some sea-birds are at certain seasons!' Perhaps you will smile at this; but if other animals, I would ask, can live for several consecutive months on their own fat, why not birds? If you think my story may be of any interest to the readers of 'The Ibis,' by all means let them have the benefit of it."

THE IBIS.

NEW SERIES.

No. VIII. OCTOBER 1866.

XXVIII.—*Additional List of Birds from Port Denison.*

By Edward P. Ramsay.

At various intervals since I forwarded my first List of Birds from Port Denison (Ibis, 1865, p. 83), I have received from the same source several collections, in which are contained many species not hitherto mentioned as being found so far to the north.

Port Denison seems to be situated at about the southern limit of the north-country birds, and the northern limit of our New South Wales species. Its fauna therefore includes many thought to be peculiar to North Australia, as well as most of the common birds of this colony.

As instances I may, among many others, mention the following birds of New South Wales :—

Pardalotus affinis,
Lopholæmus antarcticus,
Podargus strigoides,
Artamus minor,
Campephaga leucomela,
Myiagra plumbea,
Stictoptera bichenovii,
Tropidorhynchus corniculatus,
Sericulus melinus,
Ptilonorhynchus holosericeus.

Of North Australian species we have :—

Tanysiptera sylvia,
Todirhamphus pyrrhopygius,
Graucalus hypoleucus,
Campephaga karu*,
Piezorhynchus nitidus,
Mimeta affinis,
Glycyphila fasciata,
Ptilotis flava,
Myristicivora spilorrhoa,
Megapodius tumulus,

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* Also found in the neighbourhood of Brisbane.

and others, which will be found in the following list, in which the numbers prefixed to the names of the species run on from my former communication. The nomenclature here used is that of Mr. Gould's 'Handbook to the Birds of Australia,' to which references are added.

46. ASTUR APPROXIMANS (Vigors and Horsfield)? H. B. A. i. p. 41.

This is either a very peculiar variety or a new species. I am more inclined to consider it distinct upon comparing it with like specimens procured by Mr. G. Masters, and now in the Collection of the Australian Museum.

47. SPILOGLAUX BOOBOOK (Latham). H. B. A. i. p. 74.

Not rare, but by no means plentiful.

48. PODARGUS STRIGOIDES (Latham). H. B. A. i. p. 84.

A much smaller specimen than is usually procured in New South Wales. It might be *P. phalænoides*; but so much confusion exists between these two species, that, after spending the greater part of two days in trying to identify its species, I put it down as above.

49. EURYSTOPODUS ALBOGULARIS (Vigors and Horsfield). H. B. A. i. p. 96.

Common at times, though Mr. Rainbird tells me he met with only one specimen last year (1865). Towards the end of 1864 he sent down ten specimens, all from the same locality; and he also forwarded me a broken egg taken from a female which he was skinning. I am afraid it was hardly fit for laying, as the markings were very indistinct. It appears to have been about 1·1 inch long by ·75 inch wide, and is spotted pretty equally all over with reddish-brown and pale lilac. In shape it closely resembles eggs of *Caprimulgus asiaticus* which I received in a collection from Ceylon in 1863; the markings are also diffused over the surface of the shell in the same style.

50. MEROPS ORNATUS, Latham. H. B. A. i. p. 117.

Specimens from Port Denison are somewhat smaller than those from New South Wales.

51. Eurystomus pacificus (Latham). H. B. A. i. p. 119.

Apparently plentiful in certain seasons. I have received sterna of this species, procured in October and December 1865.

52. Todirhamphus sanctus (Vigors and Horsfield). H.B.A. i. p. 128.

53. Todirhamphus pyrrhopygius, Gould. H.B.A. i. p. 130.

From Port Denison I have received but a single example of this beautiful and rare Kingfisher, forwarded in December 1865. The only information obtained with it is that it was a male and was shot in that neighbourhood.

This specimen is much larger and more highly coloured than any I have received from South Australia. The sides of the neck are washed with blackish-brown, and the collar distinctly tinged with rufous.

Eggs of this species, of which a set was kindly forwarded to me by Mr. F. E. Waterhouse, of Adelaide, together with a skin, all procured in the neighbourhood of the Darling River, are slightly smaller than ordinary-sized eggs of *T. sanctus.* In length they are ·95 inch by ·9 inch in width.

54. Alcyone azurea (Latham). H. B. A. i. p. 139.

Plentiful on the borders of creeks and mangrove-swamps. The eggs of this species are pure white, like all the others of its family, ·8 to ·85 inch in length by ·7 to ·75 inch in breadth.

55. Artamus sordidus (Latham). H. B. A. i. p. 143.

56. Artamus minor (Vieillot). H. B. A. i. p. 146.

Of this very distinct little species I have seen only two specimens from Port Denison, one of which I received in May 1865.

57. Pardalotus affinis, Gould. H. B. A. i. p. 163.

58. Gymnorhina tibicen (Latham). H. B. A. i. p. 175.

Common. Specimens from Port Denison are somewhat smaller than those of New South Wales.

59. Grallina picata (Latham). H. B. A. i. p. 188.

60. Graucalus melanops (Latham). H. B. A. i. p. 192.

61. Graucalus mentalis, Vigors and Horsfield. H. B. A. i. p. 195.

62. Campephaga leucomela, Vigors and Horsfield. H. B. A. i. p. 203.

63. Campephaga humeralis, Gould. H. B. A. i. p. 204.

64. Sisura inquieta (Latham). H. B. A. i. p. 246.

65. Piezorhynchus nitidus, Gould. H. B. A. i. p. 249.
Three specimens of this beautiful Flycatcher, a male and two females, were procured from the mangrove-swamps around Port Denison. Mr. Rainbird states he met with them quite by accident while looking for specimens of *Alcyone pusilla,* which I had asked him to procure. He further states that they must be extremely rare, these being the only examples which he has met with during his residence at Port Denison, which extends now over a period of three years.

66. Petrœca goodenovi (Vigors and Horsfield). H. B. A. i. p. 280.
This species seems to be very plentiful, as upwards of a dozen specimens were sent to Sydney in one collection made by Mr. Rainbird during October and November 1865. It is by no means common near Sydney, and when found is usually in pairs.

67. Cisticola lineocapilla, Gould. H. B. A. i. p. 351.
One specimen only sent.

68. Cisticola exilis (Latham). H. B. A. i. p. 350.
The eggs of two species of *Cisticola* which are in our collection (one of which, procured from the Hunter River, I believe to be that of *C. ruficeps,* and the other that of *C. exilis*) are of a light bluish-green, spotted and dotted with reddish-brown, particularly at the larger end, where a few spots of faint purple appear beneath the shell.

69. Cinclorhamphus cantillans, Gould. H. B. A. i. p. 395.
The eggs of this species, and also of *C. cruralis* and *Ptenœdus rufescens,* have a white ground, spotted, blotched, or minutely freckled with bright reddish-brown or salmon-colour: their number is usually three. The nests are placed upon the ground beside some tuft of long grass, or, in the case of *C. cantillans,* among the dead leafy tops of trees which have been felled.

They are often composed of stringy-bark alone, at other times with grass, fibrous rootlets, and the like. These birds may be ranked among our sweetest and most lively songsters. *C. cantillans* is a perfect ventriloquist; and I have been frequently misled by fancying the bird was flying towards me, and at least a hundred yards or more away, when to my surprise one day I discovered it perched upon a bough only a few feet above my head. Its note is a continued and varied song, which it commences in a very low tone, seeming to be a considerable distance off, then getting louder and louder till it reaches an almost deafening pitch, when it suddenly stops with a loud sharp "*crack*," something like the abrupt note of *Pachycephala rufiventris* and *Psophodes crepitans*. After twittering a few notes in an under tone, it again commences its song, with which it also favours us as it flies to and fro over the fields. It seldom mounts in the air to any distance, but chiefly flies backwards and forwards over the ground at an elevation of about twenty or thirty feet. Its power of ventriloquism is truly wonderful and most perfect. When first I discovered it I could hardly believe my eyes; but when it repeated its song several times while I was standing beneath the bough on which it was perched, and closely watching it, being only a few feet from the bird itself, I left without any doubt whatever upon the subject, and only wondered why I had not observed it before. Its song being the same, except the ventriloquism, as when it is flying, one is not so likely to notice it.

70. STICTOPTERA BICHENOVII (Vigors and Horsfield). H.B.A. i. p. 409.

71. ÆGINTHA TEMPORALIS (Latham). H. B. A. i. p. 411.

72. ÆDEMOSYNE MODESTA, Gould. H. B. A. i. p. 414.

73. POEPHILA CINCTA, Gould. H. B. A. i. p. 425.

All these four species are at times plentiful.

74. CHLAMYDODERA MACULATA, Gould. H. B. A. i. p. 450.

Neither this bird nor *C. nuchalis* (Ibis, 1865, p. 85) are by any means rare. Of *C. nuchalis* Mr. Rainbird forwarded me a living example, which he states he had in confinement for upwards of five months. It feeds freely upon bread soaked in water, and almost anything in the shape of fruit. It is a great mimic, and imitates many of our native birds with much precision, accompanied by the most varied and pleasing actions.

75. PTILONORHYNCHUS HOLOSERICEUS, Kuhl. H. B. A. i. p. 442.

76. SERICULUS MELINUS (Latham). H. B. A. i. p. 456.

Several specimens were sent during the year 1865, but none previously.

77. MIMETA VIRIDIS (Latham). H. B. A. i. p. 462.

Quite similar to specimens from New South Wales.

78. MIMETA AFFINIS, Gould. H. B. A. i. p. 465.

79. SPHECOTHERES MAXILLARIS (Latham). H. B. A. i.p.466.

80. ACANTHOGENYS RUFIGULARIS, Gould. H. B. A. i. p. 534.

A single specimen is all I have seen of this species from Port Denison.

81. ANTHOCHÆRA CARUNCULATA (Latham). H.B.A.i.p.538.

82. MYZOMELA SANGUINOLENTA (Latham). H.B.A.i.p.555.

83. ZOSTEROPS, sp.?

84. CUCULUS OPTATUS, Gould? H. B. A. i. p. 614.

In the course of 1865 several specimens were sent, and among them one very beautiful and showy bird, which eventually may turn out to be a new species, but which at present, knowing the great dissimilarity which exists between the young and the adults of this genus in Australia, I have put down as the young *C. optatus*. This interesting specimen is so elaborately marked that it would take too long to describe it at present. I may mention, however, that the whole of the upper surface is chestnut-brown, barred with wavy lines of blackish-brown. Throat and chest white, closely barred with broad waves of dark brown; undersides of the wings white, barred with narrow lines of brown; breast, abdomen, and flanks the same as in the adult of *C. optatus*; under tail-coverts barred with five distinct lines of brown; feathers of tail chestnut above, barred with blackish-brown; below brown, through which the chestnut and blackish-brown lines appear indistinctly. Of course this must not be taken for a description, it is merely intended to give some idea of the bird.

In size it is quite equal to *C. optatus*.

85. CUCULUS, sp.?

Since 1862 I have several times, throughout various parts of the year, received specimens of a second Cuckoo from Port Denison; and as I am unable to find any description at all fitting it in Gould's 'Birds of Australia,' or any other publication, I believe it to be in all probability a new species, the decision of which, however, I shall leave to those better acquainted with the group. All the specimens that have been received from Port Denison, are exactly alike in plumage, and were procured from February to December.

In size they are slightly smaller than *Cacomantis flabelliformis*, (Lath.); *Cuculus cineraceus*, Vig. & Horsf.

86. CACOMANTIS PALLIDUS (Latham). H. B. A. i. p. 615.

Arrives during September and the following months in tolerable numbers.

87. LAMPROCOCCYX PLAGOSUS (Latham). H. B. A. i. p. 623.

A common summer visitant, arriving about August or September.

88. SCYTHROPS NOVÆ-HOLLANDIÆ (Latham)? H. B. A. i. p. 628.

I am not at all sure of this species. Mr. Rainbird procured four examples only, which he informs me he shot from a flock of about fifty passing over Port Denison, flying inland from the sea. They certainly resemble the true *S. novæ-hollandiæ*, but differ in having the bill much more rounded above, shorter, and more curved downwards. The quills also are smooth, with the edges not serrated. The head, throat, neck, and breast are of a very pale lead-blue, with feathers of brownish-yellow interspersed over the head, throat, and upper part of the neck. The feathers on the breast are barred, and edged faintly with white; abdomen white; flanks white, barred with dark brown; under tail-coverts white. Back and rump very dark brown; upper tail-coverts dark brown, getting blackish at the tips, which are finally edged with brownish-yellow running off into white. Primaries and secondaries tipped in the same manner; shoulders and the rest of the wing-feathers more or less tipped with brownish-yellow; *two middle* tail-feathers dark brown, with a broad band of black, and tipped with white; the others the same, but with more white at the tips, and the rest of the feathers serrated with black and white.

89. Cacatua galerita (Latham). H. B. A. ii. p. 2.

Of this species Mr. Rainbird states he shot several specimens, all having the orbits of a fleshy rose-colour, with the irides pink. In the examples he sent down I can find no difference from our New South Wales birds, save that the crest is slightly longer, and the orbits have a dark line round the lower side.

90. Calyptorhynchus banksi (Latham)? H. B. A. ii. p. 13.

91. Euphema pulchella (Shaw). H. B. A. ii. p. 77.

92. Melopsittacus undulatus (Shaw). H. B. A. ii. p. 81.

Several specimens were sent in December 1865.

93. Calopsitta novæ-hollandiæ (Latham). H. B. A. ii. p. 84.

94. Ptilonopus swainsoni, Gould. H. B. A. ii. p. 106.

Evidently very common. I have received specimens in all stages. This species appears to have three distinct stages of plumage.

No. 1, which I take to be that of the first year, has the whole of the upper surface bright green; the feathers on the back, upper wing-coverts and upper tail-coverts, bounded by a narrow line of yellow, becoming much broader on the tertiaries. From the beak to the eye, and extending half over it, is a yellow line; chin yellow; the feathers of the neck and breast (which are rounded and not forked as in the adults) are edged with a narrow yellow line; lower part of the breast, abdomen, and under tail-coverts yellow; flanks greenish, edged with yellow. Feathers of tail grey, tipped with yellow, and having the outer webs of the upperside bright green. Total length of bird about 7 inches, length of wing 4·6 inches.

No. 2, is a slightly larger bird, the total length being about 7·5 inches, length of wing 4·7 inches; and it differs only in having the chin very pale yellow, and the breast with a few of the feathers forked, the rest being as in No. 1. Abdomen and under tail-coverts slightly tinged with orange; upper part of abdomen with a few feathers of rose-pink, the same as appear on those parts in the adult birds. On the crown of the head are also a few feathers of the same tint showing through the green ones; the tail-feathers are very sparingly tipped with very light yellow, the two middle ones not at all.

No. 3. Adult as figured in the 'Birds of Australia' (vol. v. pl. 55). The Port Denison birds differ from specimens I have received from the Clarence River, in having the tips of the tail-feathers of a much lighter yellow, and in some almost white.

95. LAMPROTRERON SUPERBUS (Temminck). H. B. A. ii. p. 108.

This species appears to be equally common with the last. I have received numerous specimens of both sexes, but only two (a male and a female) in full plumage; the others are in various stages, chiefly all green (except the white abdomen), through which the plumage of the adult appears. The feathers on the breast of the young of both sexes are rounded, and not forked as in the old birds; some young males have a mixture of both.

96. MEGALOPREPIA MAGNIFICA (Temminck). H. B. A. ii. p. 110.

97. LOPHOLÆMUS ANTARCTICUS (Shaw). H. B. A. ii. p. 116.

Both these species are common, feeding in the native fig-trees.

98. PHAPS CHALCOPTERA (Latham). H. B. A. ii. p. 122.

99. PHAPS HISTRIONICA, Gould. H. B. A. ii. p. 127.

A large flock of this species visited the neighbourhood of Port Denison about October 1864, out of which Mr. Rainbird procured five specimens, three of which I received; and another, a living example, was forwarded to me in December last. It bore confinement remarkably well, feeding upon cracked maize and bread soaked in water, besides seeds of various kinds. One morning, however, it forced its head through the wires of its cage and committed suicide.

100. GEOPHAPS SCRIPTA (Temminck). H. B. A. ii. p. 130.

101. ERYTHRAUCHENIA HUMERALIS (Temminck). H.B.A. ii. p. 142.

102. GEOPELIA TRANQUILLA, Gould. H. B. A. ii. p. 144.

103. GEOPELIA PLACIDA, Gould. H. B. A. ii. p. 145.

I have received specimens of the three preceding species; but whether they are numerous at Port Denison or not I am unable to say.

104. MACROPYGIA PHASIANELLA (Temminck). H. B. A. ii. p. 148.

Rare.

105. TALEGALLUS LATHAMI (J. E. Gray). H. B. A. ii. p. 150.

More or less plentiful at times: in 1863 I received specimens, but have not heard of any since.

106. TURNIX VARIA (Latham). H. B. A. ii. p. 179.

107. COTURNIX PECTORALIS, Gould. H. B. A. ii. p. 190.

Synœcus australis (Ibis, 1865, p. 86) is common.

108. ŒDICNEMUS GRALLARIUS (Latham). H. B. A. ii. p. 210.

Always plentiful.

109. LOBIVANELLUS LOBATUS (Latham). H. B. A. ii. p. 218.

110. ÆGIALOPHILUS RUFICAPILLUS (Temminck). H. B. A. ii. p. 235.

111. ÆGIALITES NIGRIFRONS (Cuvier). H. B. A. ii. p. 232.

These two last species are plentiful in the margins of swamps and flats on the borders of creeks and rivers. In December 1864 and January 1865 I found both as far inland as Goulburn and Lake Bathurst.

112. HIMANTOPUS LEUCOCEPHALUS, Gould. H. B. A. ii. p. 246.

One bird shot November 1865.

113. LIMNOCINCLUS ACUMINATUS (Horsfield). H. B. A. ii. p. 254.

114. GLOTTIS GLOTTOIDES (Vigors). H. B. A. ii. p. 265.

115. GALLINAGO AUSTRALIS (Latham). H. B. A. ii. p. 271.

116. Carphibis spinicollis (Jameson). H. B. A. ii. p. 282.

117. Falcinellus igneus (Gmelin). H. B. A. ii. p. 286.

118. Platibis flavipes, Gould. H. B. A. ii. p. 288.

119. Ardea pacifica, Latham. H. B. A. ii. p. 297.

120. Ardea novæ-hollandiæ, Latham. H. B. A. ii. p. 299.

121. Herodias melanopus (Wagler). H. B. A. ii. p. 304.

122. Nycticorax caledonicus (Latham). H B. A. ii. p. 311.

123. Butorides flavicollis (Latham). H. B. A. ii. p. 315.

124. Butorides javanica (Horsfield). H. B. A. ii. p. 317.

125. Hypotænidia philippensis (Linnæus). H. B. A. ii. p. 334.

126. Chlamydochen jubata (Latham). H. B. A. ii. p. 354.

127. Chenopis atrata (Latham). H. B. A. ii. p. 346.

128. Anas superciliosa, Gmelin. H. B. A. ii. p. 363.

129. Anas punctata, Cuvier. H. B. A. ii. p. 365.

130. Malacorhynchus membranaceus (Latham). H. B. A. ii. p. 372.

Only one skin sent.

131. Bruchigavia jamesoni (Wilson). H. B. A. ii. p. 387.

132. Phalacrocorax novæ-hollandiæ, Stephens. H. B. A. ii. p. 488.

133. Phalacrocorax stictocephalus, Bonaparte. H. B. A. ii. p. 495.

134. Pelicanus conspicillatus, Temminck. H. B. A. ii. p. 486.

This specimen, Mr. Rainbird states, weighed 16 lbs. in the flesh.

135. Podiceps gularis, Gould. H. B. A. ii. p. 513.

Dobroyde, January 2, 1866.

Since the above was written I have received three more species from Port Denison, namely—

136. Tanysiptera sylvia, Gould. H. B. A. i. p. 137.

Only one seen.

137. Sphenœacus galactodes (Temminck). H. B. A. i. p. 399.

138. Cisticola isura, Gould. H. B. A. i. p. 352.

I have no doubt, when Mr. Rainbird has time to pay more attention to the less gaudy birds, many more of our New South Wales species will be found in Queensland.

XXIX.—*The Ornithology of India.—A Commentary on* Dr. Jerdon's '*Birds of India.*' By Edward Blyth, late Curator of the Museum of the Asiatic Society at Calcutta, Hon. Mem. As. Soc.

[Continued from p. 258.]

82. Hirundo rustica, L.; *H. gutturalis*, Scop.; *H. panayana*, Gm.; *H. jewan*, Sykes.

The average of adult Swallows from the Indian region and China are smaller than the average of European examples, to the extent sometimes of an inch in length of wing; but some Indian are undistinguishable from European specimens. Thus Dr. Jerdon remarks, "On carefully comparing specimens from England and Algiers in the Museum at Calcutta with Indian specimens from various parts of the country, I can detect no difference." Mr. Gould has lately described a *H. fretensis* (Handb. B. Austral. i. p. 110) from North Australia and Java; and this seems to be the same Swallow that Dr. Jerdon indicates as exemplified by one specimen from Java and another from Southern India (p. 157), in which case *H. frenata* has to be added to the 'Fauna Indica.' The *H. tytleri*, Jerdon (Appendix, p. 870), comes very near to *H. cahirica* of Palestine and Egypt, but is rather smaller and has much less of the black gorget. It may be said to hold that relationship to *H. gutturalis* which *H. cahirica* does to *H. rustica*; and *H. hyperythra* of Ceylon is an analogous rufous-bellied race of *H. erythropygia*.

83. Hirundo domicola.

Mr. Mottley obtained it in Borneo (P. Z. S. 1863, p. 217).

84. Hirundo ruficeps, Licht.; Gould, B. As. part xviii. pl. Abyssinia (Rüppell), and Khartum (Antinori). Mr. Gould, however, doubts the identity of the Indian and African birds, remarking that "fine examples of both now before me appear to differ too much to admit of their being considered examples of one and the same species. The Gambian specimens are much smaller, have a less amount of rufous colouring on the head, and shorter tails."

85. Hirundo erythropygia, Sykes.

This is considerably smaller than *H. daurica*, Pallas, of China; the wings are respectively 5 in. and 4·25 in. to 4·75 in. in length. Both races, however, may prove to occur in India. Dr. Bree erroneously identifies *H. rufula*, Temm., with *H. daurica*. The true *H. rufula* (which Mr. Tristram observed to be so abundant in Palestine) is figured by MM. Jaubert and Barthélemy-Lapommeraye (Rich. Orn. du Midi de la France, p. 308). Mr. Gould's figure in the 'Birds of Europe' of his supposed *H. rufula* represents, as is well known, *H. senegalensis*. In the British Museum I saw a specimen of true *rufula* from Afghánistân. According to Mr. Swinhoe, *H. daurica* is "represented in Japan and Formosa by larger varieties." *H. alpestris japonica* is figured in the 'Fauna Japonica' (Aves, tab. xi.). Comparing a specimen of *H. striolata*, T. and Schl. (*nec* Rüppell), from the island of Flores, which Mr. Wallace kindly lent me for the purpose, with the figure cited, I could perceive no difference whatever. On the label of that specimen was written—"This species was seen in East Java, flying along the roads."

86. Hirundo fluvicola.

The Swallow referred to, as described by Dr. A. Leith Adams (P. Z. S. 1859, p. 176), is distinct. Mr. Gould possesses a specimen, and designates it *Lagenoplastes empusa*. It certainly accords nearly with the description of *H. fluvicola*; but there is no white on the tail-feathers, and the crown can scarcely be called "dark rufous." It closely resembles the Australian *L. ariel*, Gould (Handb. B. Austral. i. p. 113); but differs in the rump being brown instead of white, and in the striation of the fore-neck and breast being much more developed, the black increasing on the throat. In other respects it is like *L. ariel.* Dr. Adams states that this Swallow is "common on the lakes and streams in the valley of Kashmir, and likewise in the Punjâb at certain seasons."

88. Cotyle subsoccata.

Dr. Jerdon considers this a doubtful species, in his 'Appendix,' p. 875. The specimens which Mr. Hodgson sent under this name to the Museum of the Asiatic Society at Calcutta, were decidedly identical with *C. sinensis*; and Mr. G. R. Gray assigns both *C. subsoccata* and *C. minuta* (Hodgs.) to *C. sinensis*, in the second edition of his 'Catalogue of the Birds of Nipâl.'

89. Cotyle sinensis.

This bird breeds in the cold season, burrowing into the banks of the Hugli in the same manner as *C. riparia* elsewhere; for this I can vouch, having taken the eggs and young (*cf.* Tytler, Ann. Mag. N. H. 1854, xiii. p. 371). The allied *C. riparia* does the same in Egypt (P. Z. S. 1863, p. 288), a most remarkable fact, as the latter species breeds also in its summer haunts, and the former likewise, as in Formosa (*vide supra*, p. 134)*. Dr. Jerdon merely discriminates the "Crag-Martins" from the "Sand-Martins"; but I think them better worthy of separation than several named divisions among the *Hirundinidæ*, and adopt therefore for the former subgroup the name *Ptionoprogne* of Reichenbach. The two species, *P. rupestris* and *P. concolor*, differ in size only, though in this considerably. Mr. Gould (Handb. B. Austral. i. p. 114) adopts Dr. Cabanis's genus *Cheramœca* for another burrowing Swallow, which he formerly styled *Atticora leucosternon*.

92. Chelidon urbica.

Stated by Captain Irby to be common in the cold season in Oudh (Ibis, 1861, p. 233). Col. Tickell writes—"There are great numbers here" (at Moulmein) "in the season; and I have also seen large flocks of them in India; but they appear from time to time, not constantly, as does *H. rustica*" (J. A. S.B. xxiv. p. 277.)

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* Of the permanently resident *Cypselus affinis*, also, Mr. Burgess remarks, "This Swift builds [? produces] twice in the year; I obtained a nest and eggs in September, and found a nest with young birds in April" (P. Z. S. 1855, p. 28).

95. ACANTHYLIS SYLVATICA.

The *A. leucopygialis*, nobis (J. A. S. B. xviii. p. 809), from Pinang (referred to), is, in all probability, identical with *A. coracina*, Müller, from Borneo.

97. ACANTHYLIS CIRIS; *Hirundo ciris*, Pallas; *H. caudacuta*, Lath. Other synonyms are given in Gould's 'Handbook of the Birds of Australia,' i. p. 103.

Referring to Pallas's description, I see no reason to hesitate about assigning this bird as above. Examples from the Himálaya, China, and Australia are specifically identical; but Mr. Layard's supposed *A. caudacuta* from Ceylon is *A. gigantea*.

99. CYPSELUS APUS.

An Indian specimen received from Dr. Jerdon (I presume from the N.W.); and the India Museum has it from Afghánistân.

CYPSELUS ACUTICAUDA, nobis (Jerdon Supplement, p. 870, and 'Ibis,' 1865, p. 45), must be added. A single specimen, obtained in Nipâl, is now in the Derby Museum of Liverpool. It is probable that both this and *C. leuconyx* are often mistaken on the wing for *C. apus*.

100. CYPSELUS AFFINIS, J. E. Gray; *C. abyssinicus*, Streubel; *C. galilæensis*, Antinori (*cf.* Ibis, 1865, p. 234).

This non-migratory Swift is probably diffused over all suitable parts of Arabia, which would connect its Indian range with its distribution in Africa and in Palestine. I have not seen it from the eastern side of the Bay of Bengal; but in the Malayan peninsula (at Pinang) it is replaced by *C. subfurcatus*, nobis (J.A.S.B. xviii. p. 807), which also occurs in South China, and therefore doubtless in the intervening countries of Siam, Cambogia, Cochin China and Anam. According to Mr. Swinhoe *C. subfurcatus* is "resident on the Chinese coast, not much higher than Amoy" (P. Z. S. 1863, p. 264). I believe that it is also resident at Pinang; but Mr. Layard asserts that *C. affinis* is migratory in Ceylon, a fact which has nowhere been observed on the mainland of India; and Mr. Tristram records that it is "a permanent resident in the Jordan valley." This non-migratory character is in favour of Dr. Sclater's opinion that these two Swifts form a peculiar section of the genus (P. Z. S. 1865, p. 602). I have known *C. affinis* to construct its continuous mass of nests in a low porch, so near the ground as to be reached by the hand; and I have also seen a huge cluster of the nests attached to the roofing of one of the lofty minarets of the mosque of Aurungzebe at Benáres, and have noticed the species resorting to other elevated sites; but it very commonly breeds in the porticos of houses, and sometimes within reach of the hand in a crowded bazaar.

101. CYPSELUS LEUCONYX, Blyth, J. A. S. B. xi. p. 886, xiv. p. 212 (not p. 218).

This is a considerably less robust species than *C. pacificus* (Latham), to which Mr. Gould now adds as synonyms *C. vittatus*, J. & S., *C. australis*, Gould, and "*Hirundo apus* var *β*," of Pallas, who expressly states that it has black claws; and therefore his description will not apply to *C. leuconyx*. *C. pacificus* inhabits the Tenasserim provinces and Pinang. I observed it at Moulmein.

102. CPSELUS BATASSIENSIS.

This and its African representative, *C. ambrosiacus**, form another distinct section of non-migratory Swifts. The range of the Indian bird is probably coextensive with that of the Borassus-palm, extending over the whole Indian region. It attaches its remarkable nest to the under surface of a plait of the large fan-like frond, and may also resort to other high "fan-palms," as the *Coryphæ*. Not unfrequently I have observed two or three pairs of this Swift resorting to a particular palm that was also tenanted by a colony of *Ploceus baya*†. The natives of Bengal commonly apply the name *Chámchiki* to this Swift, by which they also designate the smaller Bats.

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* Dr. Sclater (P. Z. S. 1865, p. 601) identifies this with *C. parvus*; but see Dr. Pucheran's remarks (R. Z. 1853, p. 443).

† The *Borassus flabelliformis* is the most generally diffused palm of the Indian region, and it is the "palm," *par excellence*, of Anglo-Indians. Sometimes, though very rarely, its stem divides. At the Artillery Station of Dumdum, near Calcutta, there is one of which the stem divides, and each branch divides again dichotomously, showing four contiguous "heads" or crowns of fronds. Among the drawings from the

103. Collocalia fuciphaga (Thunb.); Wallace, P. Z. S. 1863, p. 384 (*cf.* Ibis, 1863, p. 323).

Capt. Beavan informs me of the interesting fact that already in the Andaman Islands this Swiftlet "takes to breeding inside houses, preferring inner rooms, both on Ross and Chatham islands*. A large *Acanthylis* was observed on Ross." This was doubtless *A. gigantea.*

I may here remark that the genus *Podargus* (vol. i. p. 191) reverses the outer toe in perching, as is likewise observable in the Owls. The supposed genus *Otothrix* is merely the adult phase of certain *Batrachostomi.* Dr. Cabanis (Mus. Hein. ii. pp. 121, 123) refers the *Podargince* (and also the *Passerine* family *Eurylæminæ*!) to his family *Coraciidæ*! (*vide* Mr. Wallace's remarks on *Eurylæmus,* Ibis, 1864, p. 41).

109. Caprimulgus albonotatus.

Colonel Tytler endeavours to express the voice of this species in writing (Ann. Mag. N. H. 1854, xiv. p. 174).

110. Caprimulgus macrurus.

Mr. Gould states that this bird is found in "Southern India" (Handb. B. Austral. i. p. 100),—meaning the Indo-Chinese and

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collection of the Danish Missionary John, now in the Library of the Asiatic Society, Calcutta, there is one of a very remarkable palm of this species in Southern India, wherein the stem divides irregularly into numerous heads, some ten or twelve in number, much in the manner of a *Pandanus.* The African genus *Hyphæne* (comprising the Doum-palm of Upper Egypt and Nubia) is a well-known branching form; and a common ramifying palm in India and Burma is the *Phœnix paludosa* (figured in Griffith's 'Palms'), inhabiting the Bengal Sundarbans, and especially places covered by high tides, being only found near brackish water: a few others are known. In the garden of a native gentleman, near Calcutta, I saw a cocoa-nut palm which threw off many shoots or pseudo-branches from the stem (like those of the South African date-palms, but never the *Phœnix sylvestris* of India). I called the late Dr. Falconer's attention to the cocoa-nut palm here mentioned, and he had a figure taken of it.

* A more decided case of a like change of habit in the West-Indian *Tachornis phœnicobia* is noticed by Mr. March (*cf.* Ibis, 1864, p. 405).

Indo-Malayan provinces; for in Southern India and Ceylon *C. macrurus* is replaced by *C. nigripennis*.

112. CAPRIMULGUS ASIATICUS.

Noticed by Mr. Swinhoe at sea not far from Aden! (Ibis, 1864, p. 414. Quære, *C. mahrattensis*?). Of *C. europæus* Mr. Gould writes—"I believe it frequents the whole of Africa, and ranges as far east as Afghánistân" (Birds of Great Britain, pt. iii.).

114. CAPRIMULGUS MONTICOLUS.

I observed (and shot) this species in Upper Martaban, flying in company with the grand *Lyncornis cerviniceps*, the latter being by far the more abundant. On their first appearance towards evening, those superb birds would seek their food high in the air, descending gradually within gunshot, and finally sweeping about close to the ground. This habit I noticed for many successive evenings. A wounded bird would set up its aigrettes in fine style*.

Respecting the use of the pectinated claw of these and certain other birds, I agree with Dr. Jerdon that both the hypotheses to which he refers (vol. i. p. 192) are alike untenable,—but not so the opinion that it is employed to detach beetle-claws, and the like, from the *gape*.

115. HARPACTES FASCIATUS; Gould, B. As. pt. vi. pl.

116. HARPACTES HODGSONI; Gould, B. As. pt. xvii. pl.

In the first edition of his monograph of *Trogonidæ*, Mr. Gould separated the Red-headed Trogon of the Indo-Chinese province (as also of Sumatra) from that of the South Eastern Himálaya, distinguishing the former as *H. erythrocephalus*. In the 'Birds of Asia' he still regards them as distinct:—"The *H. hodgsoni*," he remarks, "differs from *H. erythrocephalus* in being considerably larger in all its proportions, particularly in the size and length of the tail, while at the same time it possesses a smaller and more compressed bill. The colours also, in all the specimens I have seen," he continues, "were less vivid, particularly the blood-red, which is much duller on the head and chest; in several specimens the scarlet had entirely given way to a dull grey colouring, which would appear to have been the consequence of the bird having just performed the task of incubation." (Does the male bird take his turn on the eggs?) "*H. hodgsoni* has the total length 13½ in.; wing 5½ in.; tail 8 in.: *H. erythrocephalus,* total length 11½ in.; wing 5 in.; and tail 6 in."

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* Mr. Gould (Handb. B. Austral. i. p. 95) refers to the species of *Lyncornis* as if inhabiting only "the Indian islands." *L. cerviniceps* is, I believe, peculiar to the Indo-Chinese countries; and *L. temmincki* is common in the Malayan peninsula.

Dr. Jerdon states (vol. i. p. 200) that the *Trogonidæ* are "without cæca." My decided impression is that they possess them. In all the passerine *Insessores* which I have examined, the cæca are invariably present but minute. In all the non-passerine *Insessores* they are either absent or else considerably developed (precisely to the same extent as in the Owls). They are absent in the *Trochilidæ, Cypselidæ, Halcyonidæ, Bucerotidæ, Promeropidæ* (? *veræ*), *Picidæ* (inclusive of *Indicator*?), *Rhamphastidæ, Capitonidæ,* and *Musophagidæ* (including *Colius*?). They are present in *Leptosomus* (?), *Coracias**, *Eurystomus, Merops, Nyctiornis, Galbula, Momotus, Todus, Bucconidæ, Trogonidæ* (?), *Caprimulgidæ,* and all the various forms of *Cuculidæ.*

The peculiar disposition of the toes in *Trogonidæ* is duly mentioned by Dr. Jerdon, and was first made known by myself (P. Z. S. 1838, p. 20).

117. MEROPS VIRIDIS; Gould, B. As. pt. vii. pl.

"Observed in the Jordan Valley by Mr. Herschell" (Tristram, P. Z. S. 1864, p. 433). The African race of this bird (*M. lamarcki,* Cuv.; *M. viridis,* Rüppell; *M. viridissimus,* Swains.; *M. ægyptiacus,* Kittlitz, and Lichtenstein, according to Cabanis) hardly differs more than do the two slight Indian varieties named by Mr. Hodgson. It has "much more ferruginous on the wings, extending across both webs of the primaries and secondaries; and the throat is yellowish-green, tinged with ferruginous, having scarcely a trace of verditer except on its extreme lateral margin bordering the black eye-streak, and very little of it even there" (J. A. S. B. xxiv. p. 254). Those which

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* To *Coraciidæ* must, I suspect, be referred the *Pseudochelidon eurystomina,* Hartlaub (Ibis, 1861, p. 322, misnamed *Psalidoprogne cypselina* in pl. xi.); but the tail-feathers would be an anomaly in the group.

I observed breeding in the vicinity of Moulmein were of the variety *M. ferrugeiceps*, Hodgson. About Calcutta *M. viridis* abounds during the cold season, and is generally known to Europeans as the "Green Flycatcher." A very few remain to breed in Lower Bengal.

118. MEROPS PHILIPPENSIS; Gould, B. As. pt. vii. pl.; *M. cyanopygius*, Lesson.

Noticed from China (Ibis, 1865, p. 30) and in Formosa by Mr. Swinhoe (*tom. cit.* p. 348).

119. MEROPS QUINTICOLOR; Gould, B. As. pt. vii. pl.

The mode of breeding in this bird has been described by Mr. Layard (Ann. Mag. N. H. 1853, xii. p. 174). It should be remarked that the common mode of figuring Bee-eaters and Rollers (as in Mr. Gould's 'Birds of Asia') gives altogether a false notion of the birds as seen alive. They sit much more erect, with the body-feathers compressed, those of the head and neck puffed out (the neck being undistinguishable), and the bill not in a line with the back, or nearly so—in fact much like the *Halcyonidæ* and *Bucerotidæ* (*cf.* Mr. Wallace's notice of *Coracias temmincki* in Ibis, 1864, p. 41). The living Motmot in the Zoological Gardens offers a suitable study to an artist who would correctly represent a Bee-eater or Roller in a sitting attitude.

120. MEROPS ÆGYPTIUS, Forsk.; *M. chrysocercus*, Cabanis.

Capt. T. Hutton describes this species and *M. apiaster* as arriving at Kandahar in the beginning of April, and leaving it in the beginning of autumn (J. A. S. B. xvi. pt. ii. p. 777)*.

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* In all Europe and Asia, the Asiatic islands, and Australia, there are seven species of true *Merops*. Two of them are western, *M. apiaster* and *M. ægyptius*, which just fall within the extreme north-west limit of the Indian region. *M. philippensis* inhabits the whole Indian region, with Southern China and Formosa, also Flores and Timor, being the eastern representative of the preceding. *M. bicolor*, Bodd. (*M. badius*, Gm.; *M. castaneus*, Latham; *M. sumatranus*, Raffles; *M. latreillii*, Bonap.; *M. hypoglaucus*, Reich.) is peculiar to the Malayan province of the Indian region, or just spreads into Siam (P. Z. S. 1859, p. 151). *M. quinticolor* inhabits the Indo-Chinese and Malayan provinces, with Southern India and Ceylon; it was obtained by the late M. Mouhot in Cambogia. *M. ornatus*, Lath. (*M. melanurus*, V. and H.) belongs to the Australian and Papuan pro-

122. NYCTIORNIS ATHERTONI.

In the Southern Tenasserim provinces (Tavai and Mergui) this species occurs together with *N. amictus*. But Dr. Cabanis divides the latter into *N. amictus* from Sumatra and Borneo and *N. malaccensis* from Malacca. If this distinction be admitted, the South Tenasserim species is *N. malaccensis*; and all that I have seen from the Malayan peninsula are referable to *A. amictus*!

123. CORACIAS INDICUS.

Dr. Cabanis (Mus. Hein. ii. p. 118) gives *C. indicus*, L., from Ceylon, as distinct from *C. bengalensis*, L., from Nipâl, and also *C. affinis* from Tenasserim. Wherein the former differ I am not aware. Can one of them be the bird in the plumage of immaturity, with narrow terminal tail-band? or can the Nipalese specimen be a hybrid as Dr. Jerdon suggests? In the Malayan province there is no *Coracias*, but the genus reappears in the fine *C. temmincki* of Celebes (*not* New Guinea). Since the electric telegraph has been established in India, *C. indicus* has especially taken to the wires as a post of observation, as also has *Dicrurus macrocercus*.

125. CORACIAS GARRULA.

In Afghânistân, remarks Capt. T. Hutton, "this bird is very common during the summer months, but departs by the end of autumn: it arrives at Kandahar in the middle of April" (J. A. S. B. xvi. pt. ii. p. 777).

126. EURYSTOMUS ORIENTALIS (L.).

The Chinese species would appear to be *E. pacificus* (*E. australis*, Swains.) (Ibis, 1865, p. 30), which was obtained by Mr. Wallace in "Borneo and the islands eastward." Mr. G. R.

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vinces of the Australian region, inhabiting Australia to lat. 14° S.; and it was observed by Mr. Wallace in Sumbawa, Lombok, Flores, Celebes, the Sula Islands, Ternate, Timor, Mysol, and New Guinea: the specimens from the Sula Islands, he remarks, "agree with those of Ternate in having more brown on the head, and less blue on the breast, than the Timor and Lombok specimens" (P. Z. S. 1862, p. 338). *M. viridis*, though common in Burma and Siam, does not appear to extend to the Malayan province, and is represented by a barely distinguishable race in Africa, the Sula specimens of *M. ornatus* exhibiting an analogous tendency to local variation in that species.

Gray, however, gives *E. orientalis* from Batchian and Ternate, which is a mistake, also *E. azureus*, G. R. Gray, from Batchian, and indicates *E. pileatus*, Reinw., from the Moluccas (P. Z. S. 1860, pp. 345–6). But is not the latter a synonym of *Coracias temmincki* of Celebes? In a collection received from the Batavian Society by the Asiatic Society, Calcutta, a specimen of *C. temmincki* was labelled *C. pileata*. In the British Museum catalogue of mammalia and birds inhabiting New Guinea, Mr. G. R. Gray further gives *E. gularis*, Vieillot, from that vast island. Are there more than three (very slightly differing) Oriental races—*orientalis*, *azureus*, and *pacificus*? Radde's figure (Reisen &c. ii. taf. ii. fig. 2) would seem to show that *E. pacificus* is the East Siberian form, to which also belong Mr. Swinhoe's Chinese specimens now with Mr. Tristram. That the Indian species should eat plantains, always appeared to me very remarkable; but one that I long kept in an aviary would devour them eagerly, and would fly to me for one when I had it in my hand*. Besides *Eurystomus pacificus*, certain other species migrate on both sides of the equator, as *Acanthylis ciris*, *Cypselus pacificus*, *Cuculus striatus*, and *Eudynamis mindanensis* (?). According to Messrs. Mottley and Dillwyn, *Eurystomus orientalis* "is a most active and lively bird, haunting very tall jungle in parties of five or six together; these fly rapidly, in large circles, with quick strokes of the wing, like the flight of Woodpeckers, and frequently swooping down upon one another with loud chattering. When perched, their note is a single full deep-toned whistle, or something between that and the sound "you," when uttered with forcible expulsion of the breath." Mr. Gould gives some further particulars of the habits of this genus (Handb. B. Austral. i. p. 120).

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* The "plantain" of Anglo-Indians is the "banana" of the West; and the "plantain" of the West is the "horse-plantain" of Anglo-Indians (on the principle of horse-radish, horse-chestnut, horse-leech, &c.). The cultivated varieties of banana and plantain are endless; and in Burma I found them to be as numerous as in Bengal, but all of them different! At Moulmein I observed a curious variety of the plant, bearing three successive bunches, or rather loads, of fruit on the same stem of the usual size, and each divided from the next by an interval and a coronet of small leaves. The oldest bunch was nearly ripe, the next almost full-grown; and the third had the fruit just set, with the usual great heart-shaped flower-bud beyond it! Plantains are a great resource in hot countries for feeding frugivorous animals; and in Lower Bengal there is also a never-failing abundant supply of prawns and shrimps (four species of *Penæus*, and a dozen or more of *Palæmon* of all sizes, from the great *Palæmon carcinus* downwards), upon the smaller of which not only the smaller wading-birds generally, but sundry land-birds also, prey readily. Again, the effluvium from the shrimps attracts numerous flies, upon which for many months a fine white *Tchitrea paradisi* and other fly-catching species maintained themselves abundantly in my aviary.

127. HALCYON LEUCOCEPHALUS.

I have already noticed (Ibis, 1865, p. 30) the existence of five geographical races of this bird. Dr. Cabanis (Mus. Hein. ii. p. 156) adopts the name *H. gurial*, Pearson, for the Indian race, and *H. javana* (Bodd.) for the Malacca race; though the Javan bird differs from that of the Malayan Peninsula, having a pale brownish cap not well defined, whereas the Malaccan bird has a well-defined dark brown cap, which is slightly glossed with bright colouring. Professor Schlegel, however, states that a Nipalese example is absolutely similar to specimens from Java! One from Timor resembled the ordinary Malayan Peninsula race. Captain Beavan writes to me that that the Andaman race "has the head much whiter than in Bengal," in which case it should be identical with the Burmese race. I have observed no variation in specimens from India and Ceylon.

128. HALCYON AMAUROPTERUS.

Prof. Schlegel places this bird as a variety of the last! No two species can be more dissimilar in *voice*, as long ago remarked by myself, and duly noticed by Dr. Jerdon.

129. HALCYON FUSCUS (Bodd.); Gould, B. As. pt. xiii. pl.

With Strickland (Ann. Mag. N. H. ix. p. 442) and Dr. Jerdon (in his "List of Errata") I doubt the propriety of separating this bird from the *H. smyrnensis* (L.) of Asia Minor, Mesopotamia, Persia, and Arabia as I would separate the two preceding species; but at most would regard it as a slight geographical variety analogous to those of *H. leucocephalus*. Mr. Gould remarks—"The only differences which I am able to detect between it and the Smyrna bird are a slight variation in size and in brilliancy of colouring, the Indian being somewhat smaller and more intense and beautiful in colour." Such is the Malayan Peninsula race of *H. leuco-*

cephalus as compared to the Indian race. Dr. Bree, in his 'Birds of Europe,' represents an Indian specimen! Prof. Schlegel adopts the name *Alcedo fusca*, Bodd., with *A. smyrnensis*, L., as a synonym; but he also adds *A. gularis*, Kuhl (Gould, B. As. pt. xiii. pl.), from the Philippines, which should at least be noted as a very strongly marked variety. Mr. Swinhoe identifies the Chinese race with the Indian. An individual which I long kept in an aviary would feed readily on cockroaches thrown to it, seizing them from the ground without alighting, and carrying them to its perch.

130. HALCYON ATRICAPILLUS (Gmel.); Gould, B. As. pt. x. pl.

In Mr. Gould's figure of this species the bill should be much deeper and brighter coral-red; and the head in the living bird looks considerably larger, while the body-feathers are more compressed.

131. HALCYON COROMANDELICUS.

Malayan province, Philippines, Formosa, Japan; but the Japanese race is said to be rather smaller and more deeply coloured.

132. TODIRHAMPHUS CHLORIS (Bodd.).

T. superciliosus, Gray, is said by Mr. Cassin (Ornith. U. S. Exploring Expedition, p. 203) to be a synonym of this species.

134. ALCEDO BENGALENSIS, Gmel. (Faun. Jap., Aves, pl. xxxviii.; Gould, B. As. pt. xiv. pl.); *A. minor*, Schlegel.

Extends to China, Amuria, Japan, the Loochoo Islands, and Formosa; in the Tenasserim provinces and Malayan Peninsula it occurs together with *A. meningting*, Horsf. (*A. asiatica*, Swains.), but the latter keeps to the immediate vicinity of the sea (J. A. S. B. xxxiii. p. 195). M. J. de la Berge figures and describes a fine Kingfisher akin to *A. meningting*, from Borneo, by the name *A. verreauxi* (Rev. Zool. 1851, p. 305, pl. ix). In the Moluccas *A. bengalensis* is represented by *A. moluccensis*, nobis (*A. sondaica*, Cabanis). *A. ispida* of Afghánistân (J. A. S. B. xvi. pt. ii. p. 777) needs confirmation.

135. ALCEDO GRANDIS, nobis, J. A. S. B. xiv. p. 190.

The Malayan *A. euryzona*, Temm. (juv. = *A. nigricans*), is quite distinct. The specimen is still unique, and the species should be looked for in Bután (*cf.* Ibis, 1865, pp. 30, 31).

136. CERYLE RUDIS.

Common in China, and doubtless the "white-spotted species" noticed in Siam by the late Sir R. H. Schomburgk (Ibis, 1864, p. 247)*.

139. SERILOPHUS RUBROPYGIUS (Hodgson); Gould, B. As. pt. xxiii. pl.

140. HOMRAIUS BICORNIS.

Referred to *Dichoceros*, Gloger (1842), by Dr. Cabanis (Mus. Hein. ii. p. 173).

The Nipalese name, "Homrai," for this species is derived from its note, which I have repeatedly heard uttered in the Zoological Gardens.

141. HYDROCISSA CORONATA (Bodd.); Pl. Enl. 873; "*Buceros violaceus*, Shaw," nobis, J. A. S. B. xxi. p. 352.

143. HYDROCISSA AFFINIS is like *H. albirostris*, but of the considerably larger size of *H. coronata*. The Malayan *H. convexa* has the size and broader casque of *H. albirostris*, combined with the wholly white three outer pairs of rectrices of *H. coronata*. As compared with other races, differing in size only, the disparity between *H. affinis* and *H. albirostris* is less marked than between *Hirundo rupestris* and *H. concolor*, *Phyllornis javensis* and *P. cyanopogon*, Himalayan *Turtur rupicolus* and *T. auritus*, but equivalent to that in many other instances wherein the distinction is currently recognized, and greater than in some, as *Turdus hodgsoni* and *T. viscivorus*, *T. olivaceus* and *T. olivacinus*, Bonap.†

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* [Mr. Swinhoe makes the same suggestion, *supra*, p. 292.—ED.]

† The following additional instances of races differing only in size may here be cited:—*Milvus govinda* and *M. affinis*; *Ephialtes* (various); *Alcedo ispida* and *A. bengalensis*; *Megalæma philippensis* and *M. indica*; *Chrysocolaptes sultaneus* and *C. delesserti*; *Hemicercus canente* and *H. cordatus*; *Hierococcyx sparverioides* and *H. nisoides*; *Cuculus affinis* and *C. micropterus*; *C. canorus*, *C. himalayanus*, and *C. poliocephalus*; *C. tenuirostris* and *C. flavus*; *C. dicruroides* and *C. lugubris*; *Caprimulgus indicus* and *C. kelaarti*; *C. monticolus* and *C. affinis*; *Fregilus himalayanus* and *F. graculus*; *Pyrrhula coccinea* and *P. vulgaris*; *Crithagra butyracea* and *C. chrysopogon*; *Estrelda amandava* and *E. punicea*; *Pratincola bicolor* and

144. Meniceros bicornis (Scop.); *Penelopides ginginianus* (Lath.); Cabanis (Mus. Hein.).

The last author refers this bird to the same minimum division as the Philippine *P. panini* (Bodd.) (*Buceros panayensis*, Scopoli), to which it surely is not very nearly akin, *Meniceros* of Gloger being assigned to the *B. rhinoceros* type, or typical *Buceros*, according to Dr. Cabanis. The adoption of Scopoli's specific name for this species involves some inconvenience, the same name being also applied to the great Homrai.

145. Toccus gingalensis.

This should be *T. griseus* (*Buceros griseus*, Latham; *B. cineraceus*, Temm.), as distinguished from the true *T. gingalensis* of Ceylon, which, together with the present species, inhabits that island. The two were discriminated by Mr. E. L. Layard (Ann. Mag. N. H. 1854, xiii. p. 260), though he describes both under the name *gingalensis*. Mr. Layard also indicates a second *Hydrocissa*, akin to *H. albirostris* and *H. convexa*, as inhabiting the mountains of Ceylon. I have only seen *T. cineraceus* from Malabar and Ceylon; but Prof. Schlegel gives it from Nipâl (Franks).

146. Aceros nipalensis, Hodgs.; Gray and Mitchell, Ill. Gen. Birds, pl. 99.

The range of this species extends to the Tenasserim provinces (Ibis, 1864, p. 182). Dr. Jerdon refers to three species of *Rhyticeros* as inhabiting Burma and Malacca, by the names *R. ruficollis*, *subruficollis*, and *plicatus*. I know of two only, viz., *R. plicatus* (Lath., Schl.) = *Rhytidoceros obscurus* (Gm.), Cabanis = *Buceros pasuran*, Raffles = *B. ruficollis*, nobis (*olim*); and *R. subruficollis*, nobis (adopted by Cabanis), which hardly differs

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P. caprata; *Sylvia affinis* and *S. curruca*; *Regulus himalayensis* and *R. cristatus*; *Dicrurus macrocercus* and *D. minor*; *Graculus macii* and *G. javensis*; *Arachnothera longirostra* and *A. pusilla*; *Henicurus speciosus* and *H. frontalis*; *Turnix andalusica* and *T. dussumieri* (*vera*); *Nettapus albipennis* and *N. coromandelianus*; *Larus glaucus* and *L. islandicus*, &c. &c. The *Loxiæ* are robust in proportion to their size, as *L. pityopsittacus*, *L. curvirostra*, and *L. himalayana*; so, indeed, are *Larus glaucus* and *L. islandicus*; and if a species were to occur just intermediate to *Totanus glottis* and *T. stagnatilis*, there would be a corresponding series to that of *Loxia* in a genus of Waders.

from the Papuan *R. ruficollis* (Vieillot): the *sole distinction of plumage,* and that in the male sex only, being that in the Tenasserim race the dark colour of the cap contrasts strongly with the yellowish-white of the cheeks (as also in *R. plicatus*), whilst in the Papuan race these colours are more or less blended. The cheeks and gular skin are, however, *clear pale yellow* in the male of the Tenasserim bird; whereas Mr. Wallace informs me that the males of the Papuan race have the bare skin of the throat bluish-white, while in the females it is milk-white, with the margins merely tinged with bluish. Irides salmon-coloured in the Papuan race, crimson in the Tenasserim race. This latter, and the mode of growth of its casque, is noticed in the 'Catalogue of the Birds of the India Museum,' ii. 600 (also P. Z. S. 1839, p. 452). The very slight differences between the two would never be recognized as of specific import by Prof. Schlegel, while the identification of them as one species involves a remarkable anomaly in geographical distribution, since no corresponding form has been obtained from the intervening countries. I have only seen *R. subruficollis* from the Tenasserim provinces, whereas *R. plicatus* ranges northward to the hills bordering on Sylhet, and southward into the Malayan Peninsula, Sumatra, and Java. In the India Museum is a drawing of a fresh specimen of *R. subruficollis,* taken under the superintendence of the late Dr. Wallich*.

Prof. Schlegel gives certain species of Hornbill as inhabitants of "Hindustan," which have never occurred to British observers in that country†.

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* The Burmese Hornbills are as follows:—

1. *Dichoceros bicornis.* Indo-Chinese countries, Malayan Peninsula, and Sumatra. In Burma much more numerous, and far less shy than in India.

2. *Hydrocissa albirostris.* Bengal, Nipâl, Asám, Indo-Chinese countries (Sumatra, Java, and Borneo, *teste* Schlegel. Qu. *H. convexa*?).

3. *Anorrhinus tickelli,* nobis (Ibis, 1864, p. 173; J. A. S. B. xxiv. p. 266, xxviii. p. 412). Tenasserim provinces.

4. *Rhyticeros plicatus.*

5. *R. subruficollis.*

6. *Aceros nipalensis.* S. E. Himálaya, Munipur, Tenasserim provinces.

† In India it should be borne in mind that the name *Hindustân* refers

Of *B. rhinoceros* he remarks—"Individuals from Hindustân and Ceylon resemble those from Java, but it appears that their caudal band is considerably narrower" (Mus. P.-B. *Buceros*, p. 4). *B. rhinoceros lunatus* is also given from Hindustân and Ceylon.

B. coronatus (Bodd. *nec* Temm.) is given from Hindustân and Sumatra. (Surely the Sumatran individuals—if veritably Sumatran—should be referred to *B. convexus*, which has the casque smaller and much broader than it is in the common species of South India and Ceylon, nearly resembling, in coloration as in form, that of *B. albirostris*.)

B. malayanus. "Observed in Hindustân."

Most assuredly no assertion regarding the fauna of "Hindustân" can be made with more implicit confidence, than that the list of Hornbills admitted into Dr. Jerdon's work is a complete one, unless, indeed, the *Toccus gingalensis* (*verus*) should yet prove to inhabit Southern Malabar. Such very conspicuous birds could not escape the notice of British ornithologists in India, and moreover they would be familiarly known to the natives—*B. rhinoceros* beyond all question. The heads of Hornbills are commonly enough preserved and kept when ordinary birds pass unnoticed. Even a single additional species would need very positive evidence for its acceptation; but *B. rhinoceros* and *B. lunatus* (which are not elsewhere found together), and *B. malayanus* in addition! it can only be a mistake. Heads or even skins might have been obtained from natives, but they had been originally imported.

In associating the Parrots with "other *Scansores*" Dr. Jerdon writes—"I agree with Gray, Horsfield, Wallace, and indeed most naturalists, that their true place is among the Scansorial division of the *Insessores*." Mr. Wallace, however, has since expressed an opposite opinion (P. Z. S. 1864, p. 278). Dr. Jerdon further adduces as one reason for thus classing the *Psittaci* "their very great development in Australia, to the total

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exclusively to the Upper provinces of the Bengal Presidency, as distinguished alike from Bengal and from the Dukhun or tableland of the peninsula, which is the southern home of the Hindus proper.

exclusion of Woodpeckers." Now not only are Woodpeckers excluded from Australia, but all of the non-*Psittacine* zygodactyle birds, excepting parasitic *Cuculinæ*, and one or more allied species of *Centropus*— in fact, all of those which have a doubly emarginated sternum, no cæca, and agree in laying pure white eggs in holes of trees: such are the *Megalæmidæ* (*Capitonidæ*) of the Indian region, Africa, and South America, the nearly allied *Rhamphastidæ* of South America, and the *Musophagidæ* of Africa—those birds which, among the zygodactyle *Insessores*, might be thought to approximate to the Parrots more nearly than any others. Indeed the exclusion of that group extends to the whole Australian region, with the exception of three Woodpeckers in Celebes and one in Lombok, its extreme western boundary, so that the argument tells rather in the opposite direction. I fail to perceive any special approximation on the part of the Parrots to any true Insessorial bird whatever, and consider that, as an order of birds, they stand quite as distinctly apart as the birds of prey.

147. PALÆORNIS ALEXANDRI is found also in the Andaman Islands.

149. PALÆORNIS ROSA.

Occurs also near Canton (Swinhoe, P. Z. S. 1863, p. 159). Mr. Louis Fraser possesses a specimen with a green tail; habitat unknown. Is not this the Chinese race?

150 and 151. PALÆORNIS SCHISTICEPS and P. COLUMBOIDES; Gould, B. As. pt. x. pls.

152. PALÆORNIS JAVANICUS.

Professor Schlegel adopts the separation of the Javan race from that of North-eastern India and Burma, identifying with the former *P. derbianus*, Fraser (P. Z. S. 1850, p. 245, pl. xxv.; Gould, B. As. pt. x.),—an opinion from which I must dissent, having examined the type-specimen in the Derby Museum of Liverpool. Neither can I agree in the separation of the common Burmese bird from that of Java and Borneo. From an early age (before leaving the nest) the sexes differ in the male having the upper mandible coral-red, while that of the female is black (besides being smaller, as also in *P. alexandri*);

and in many females it perhaps remains permanently black, while in others it changes sooner or later to red. This I have witnessed in a caged specimen, besides having repeatedly obtained them with the bill in every stage of progress in changing from black to red. The name *P. ponticerianus* is founded on error, as the species does not inhabit the Indian Peninsula. I am tolerably well acquainted with it, having spent a month in forests where, together with *P. rosa*, it is most numerous, and where a few of them occasionally contributed to our fare in the shape of a stew.

157. PICUS MACII.

This, with others, appertains to the division *Dendrotypes*, Cabanis, the rest being *P. analis*, Horsf. (*P. pectoralis*, nobis), from Java, *P. atratus*, nobis (J. A. S. B. xviii. 802, xxviii. 412), from the higher Tenasserim mountains, *P. andamanensis*, nobis (J. A. S. B. xxviii. 412), from the Andaman Islands and also Sumatra, *D. nesiotes*, Cab. & Heine, from Formosa, and (in my opinion) *P. brunneifrons*, Vigors, from the Himálaya. There must surely be a mistake about *P. macii* occurring in Ceylon!

158. PICUS SCINDIANUS.

This, with *P. medius* and *P. syriacus*, if not also *P. khan* (Ibis, 1864, p. 400), forms the division *Dendrocoptes*, Cabanis.

160. PICUS MAHRATTENSIS.

This, with the slightly differing *P. blanfordi*, nobis (J. A. S. B. xxxii. 75), from Upper Pegu, constitutes the division *Liopopo*, Cabanis.

164. YUNGIPICUS HARDWICKII.

Mr. Wallace obtained the true *Y. moluccensis* in Lombok; and Dr. Jerdon's supposed *moluccensis* from the Indo-Malayan province will now stand as *Y. sondaicus*, Wallace.

165. HEMICERCUS CORDATUS.

Constantly smaller than *H. canente* of the Indo-Chinese countries. Dr. Jerdon's "pretty little *H. concretus*" divides into *H. concretus* of Java, *H. sordidus* (*H. hartlaubi*, Malherbe), of the Malayan Peninsula, and *H. coccometopus*, Reich., of Borneo.

166. CHRYSOCOLAPTES SULTANEUS.

Two races have been confounded under this name. The first is *Picus sultaneus* (as originally described by Mr. Hodgson), of larger size, rare, and (so far as known) peculiar to Nipâl; Mr. Gould has a specimen (type of *P. strenuus,* Gould), the only one which I have seen; the closed wing (as figured by Malherbe) measures 7·5 in. The other species, *P. delesserti* of Malherbe, is more or less diffused throughout India, Asám, the Indo-Chinese countries, and Malayan Peninsula. I have compared specimens from Asám, Siam, and Southern India which were identical in race, the length of wing not exceeding 6·25 in. in males, and 6 in. in females. This race is the *Picus strenuus* from Asám (P. Z. S. 1839, p. 165), and I have seen it assigned to *P. strictus* from the Malayan Peninsula; but the latter (from Java) is again smaller, with a yellow cap in the female sex as in the following species.

167. CHRYSOCOLAPTES FESTIVUS (Bodd.); *Picus goensis,* Gm.; *P. humeralis,* Wagler.

Some females have the yellow crest tipped with crimson. The Ceylon species, *C. stricklandi* (Layard) (*Indopicus carlotta,* Malherbe, *vide* Ibis, 1863, p. 267), is distinguished from the very similar *C. hæmatribon* of the Philippines by its whitish bill and blackish auricular plumes. *Chrysocolaptes stricklandi* and *Brachypternus ceylonus* (Forster) (*Picus erythronotus,* Vieillot), bear a remarkable resemblance in colouring, though not in structure; but all the species of the former division have the rump crimson, and those of the latter black, *B. ceylonus* not constituting an exception. Even Dr. Jerdon figured the *Chrysocolaptes* for the *Brachypternus* in his 'Illustrations of Indian Ornithology'!

168. MUELLERIPICUS PULVERULENTUS.

Type of *Lichtensteinipicus* (!), Bonap. (*Alphonerpes,* Cabanis), and the species referred to *P. gutturalis,* Valenciennes. The young bird, perhaps the male only, is remarkable for having the frontal region crimson-tipped. In the European *Picus major,* and probably certain allied species, the young of both sexes have the crown tipped with crimson; while the adults have a black crown, adorned in the male only by a crimson occipital crescent.

173. CHRYSOPHLEGMA FLAVINUCHA, Gould; Gray and Mitchell, Ill. Gen. Birds, pl. 109.

C. malaccensis of the Malayan Peninsula, Sumatra, and Borneo, differs from *C. miniata* of Java, the latter having "the whole crest and the greater part of the back red" (P. Z. S. 1863, p. 211).

182. BRACHYPTERNUS DILUTUS.

The three Indian species of this genus are sufficiently well distinguished. Mr. Gould has good specimens of all of them, as well as of the several races of *Chrysonotus*. *Brachypternus* is quite peculiar to India with Ceylon.

184. CHRYSONOTUS INTERMEDIUS.

Javan specimens appear to be quite identical with this race, so common in the Indo-Chinese countries. It also extends to Pinang, but at Malacca is replaced by the small *C. tridactylus*.

188. JYNX TORQUILLA.

Mr. Gould remarks (in his 'Birds of Great Britain,' pt. i.)—"While writing this account of the Wryneck, I have before me specimens from Japan, China, India, Asia Minor, and Great Britain, in all of which slight differences are observable; the Japanese and Chinese birds are smaller, redder, and more strongly marked than are those from India, which, again, are more lightly coloured than those of Europe. The bird from Rome differs from all the others in having the whole of the under surface crossed with broad bars, instead of a few arrow-shaped marks as in the English specimens. I cannot, however, consider these as anything more than mere local varieties of one and the same species." *Incipient species* perhaps; though I doubt that, if an adequate series of British and Indian specimens were compared, even the slight difference of shade indicated by Mr. Gould would be found to prevail, or at least to be of constant occurrence, besides that it is a species of migratory habits.

189. JYNX INDICA.

This species, from Afghánistân and Tibet, according to Dr. Jerdon, "remains to be ascertained as an inhabitant of India," or even of the vast Indian region. But it cannot winter in Middle Asia. Certain Woodpeckers (as *Melanerpes*) feed more or less on fruit, and others (various pied species) on oleaginous seeds; but *Jynx* I believe to be purely insectivorous, and mainly an ant-devourer. I am rather surprised that this species did not fall under the observation of Herr Radde in Eastern Siberia.

190. INDICATOR XANTHONOTUS.

This rare bird is beautifully represented in one of Mr. Hodgson's drawings in the British Museum, one of the figures clinging (Woodpecker-like) to the bark of a tree.

MEGALÆMIDÆ.—The birds of this family hop from twig to twig, like the ordinary *Passeres*, and should not be habitually represented clinging to the bole of a tree as Mr. Gould figures *Megalæma nuchalis* (B. As. pt. xvi.)—a remnant of the old error of subordinating them to the *Picidæ*. The *Megalæmidæ* (or *Capitonidæ*) have a much nearer affinity to the *Ramphastidæ* than they have to the *Picidæ*. Apart from the anatomical conformity, it may be remarked that if the larger Toucans were unknown, the species of *Aulacorhamphus* and such a bird as *Selenidera langsdorffi* (Gould, Mon. *Rhamphastidæ*, pl. 33) would surely have been unhesitatingly assigned to the group of Barbets, to say nought of such forms as the Malayan *Calorhamphus* and the South American *Tetragonops* (Ibis, 1861, pl. vi., 1864, pl. x.); or compare with the forms brought together under *Cuculidæ* (as *Scythrops, Rhinortha, Phœnicophæus, Centropus, Crotophaga, Saurothera, Cultrides, Coua*, &c.), or those collated under *Caprimulgidæ* (as *Ægotheles, Podargus, Steatornis, Nyctibius*, and *Caprimulgus**)! Skeletons of Toucan and Barbet are figured in Sir William Jardine's 'Contributions to Ornithology' (pls. 53 and 54). I remember once winging a Wryneck, and placing it on the perpendicular trunk of a tree, which it immediately ascended so rapidly, with vigorous springs, and pressing its soft tail against the bark, that I nearly lost it; and I have since shot a Wryneck, in India, in the act of ascending the bole of a tree Woodpecker-fashion. I have tried the same experiment with Barbets, both with a winged old bird and young birds about ready to fly; and they have just as much notion of climbing as a Sparrow has, neither more nor less. It is true that they breed in the holes of trees, and so also do the Toucans; and I have seen one fly direct to its nest-hole, as a Titmouse would do, but never clinging to the bark. Of *Xantholæma indica*, Mr. Layard remarks—"Like the other species, it breeds in holes, and I have seen it in the act of excavating them in decaying portions of living trees" (Ann. Mag. N. H. 1854, xiii. p. 448). Dr. Jerdon remarks—"I never saw any of these Barbets climbing, like a Woodpecker, nor heard them tapping, that I am aware of." They are common birds, sometimes not at all shy, and are at any time under the observation of a naturalist in India as familiarly as a Chaffinch is here; and had they climbing-propensities, such could not escape the notice of habitual observers; moreover they feed on fruit and berries, and not upon insects and wood-boring larvæ, and have therefore no business to traverse the boles and larger branches of trees like a Woodpecker or Nuthatch. They are anything but "omnivorous" as Mr. Gould intimates in his 'Handbook to the Birds of Australia' (i. p. 2). I have kept them for months in captivity, and have invariably found them to refuse insect-food, although, in a captive state, Mr. Layard found one to exhibit a carnivorous and predatory propensity, which I should say was most unusual; but this again is in accordance with their affinity to the Toucans.

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* The anatomy of the genus *Batrachostomus* is very different from that of *Caprimulgus*. The stomach is a highly muscular gizzard, as is that of *Nyctibius*, and there is a small gall-bladder. The sternum is small, subquadrate, with but a slight keel, and *four* deep emarginations behind; the coracoids long and slender, and furcula like that of *Caprimulgus*, but more slender.

A *luteino* variety of *Xantholæma indica* (the *Bucco luteus* of Lesson) is figured by DesMurs (Icon. Orn. pl. 21). I have seen similar *luteino* varieties (corresponding to *albinos*) in various other green birds, as Parrots, Bee-eaters, fruit-eating Pigeons, &c. The yellow cage Canary-bird is a familiar instance of the kind, which has the pink eyes of an ordinary albino.

192. MEGALÆMA HODGSONI, Bonap.

M. lineata, auct., of North-eastern India and the Indo-Chinese countries generally, as far at least as Cambogia, where the species is mistaken by Prof. Schlegel for the Javan *M.*

corvina, which is wholly unknown in those parts. *M. viridis*, Schlegel, of Java, is also quite distinct from *M. viridis* (*vera*) of Southern India, and is probably the true *M. lineata* (*Capito lineatus*, Vieillot), as Prof. Schlegel himself suggests.

197. XANTHOLÆMA INDICA.

To this should be referred Sir R. H. Schomburgk's *Megalæma philippensis*, from Siam (Ibis, 1864, p. 258; *vide* P. Z. S. 1859, p. 151).

199. CUCULUS CANORUS. *C. indicus*, Cabanis.

Mr. Wallace has a specimen from Eastern Timor, which is undistinguishable from the common European bird*.

200. CUCULUS STRIATUS, Drapiez†; Gould, B. Austr. iv. pl. 84; "*C. lineatus*, Lesson," Pucheran, Rev. Zool. 1853, p. 70; *C. himalayanus*, Vigors (*nec* Gould, Cent. Him. B.); *C. canoroides*, Müller; *C. canorinus*, Cabanis; *C. saturatus*, Hodgson; *C. optatus*, Gould; *C. horsfieldi*, Moore; and probably *C. libanoticus*, Tristram (P. Z. S. 1864, p. 432). Prof. Schlegel adds *C. teleophonus*, Heine, J. f. O. 1863, p. 352 (from Japan), and *C. swinhoii*, Cabanis and Heine, Mus. Hein. iv.

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* Mr. Swinhoe indicates a race as constituting his "second series" of *Cuculus canorus* (?), "of similar form, with fulvescent under parts, banded with much broader bars more widely set, with the axillaries nearly barless. One has a somewhat large bill, and two are almost entirely blackish-brown in the parts which should be grey." (One specimen from Tientsin, and four from Amoy. P. Z. S. 1863, p. 265.) Also, recently, a small species which he designates *C. kelungensis* (Ibis, 1865, p. 107).

In page 323 of Dr. Jerdon's first volume the following words are printed twice over:—"its familiar note until it was separated from female." Erase them where they appear first.

† I follow Prof. Schlegel in adopting the name *striatus*, Drapiez, for this species, although, comparing specimens before me of this and of *C. micropterus*, the latter certainly accord better with the description by M. Drapiez:—"Taille, douze pouces. Parties supérieures d'un *brun cendré*, bleuâtre; remiges brunes, frangées de blanchâtre, les deux premières dentelées de roussâtre; rectrices peu étagées [if we except the outermost pair, this holds good in *C. micropterus*, less so in the other]. * * * Bec noir, roussâtre en dessous à sa base." Both species occur in Java. The size would indicate *C. micropterus* rather than *C. affinis*, to which latter *C. striatus* is assigned by Dr. Jerdon.

p. 37, *note* (from China and Formosa); also *C. tenuirostris* and *C. lepidus* of Müller. *C. monosyllabicus,* Swinhoe, Ibis, 1865, p. 545, is probably yet another synonym.

Mr. Wallace has examples from Java, Batchian, Celebes, Flores, and Timor. Himalayan examples agree exactly with Mr. Gould's figure of an Australian specimen.

201. CUCULUS POLIOCEPHALUS, Lath.; *C. intermedius,* Vahl; "*C. tenuirostris,* Lesson," Cassin; *C. fuscatus,* Peabody (Ornithology of Wilkes's U. S. Exploring Voyage, pl. 21. f. 1).

Specimens from Java, in Mr. Wallace's collection, are perfectly similar to those from the Himálaya, Nilgiris, and mountains of Ceylon.

202. CUCULUS SONNERATI.

This is a very distinct species (as observed by Dr. Jerdon and myself), which never assumes the grey phase of plumage when adult, and is conspicuously different from the young of *C. poliocephalus,* with which Prof. Schlegel identifies Dr. Jerdon's bird, though recognizing the same species afterwards and noticing it as diffused from India and China to the Indian Archipelago and Australia. I have only seen it from Malabar, Ceylon, the Tenasserim provinces, and Malayan Peninsula, but the young of *C. poliocephalus* often enough from the Himálaya. It may be remarked that adults of *C. poliocephalus,* especially females, assume the hepatic phase of plumage very commonly, those of *C. striatus* much more rarely, and of *C. canorus* very rarely. The *Chok-gallos,* or Hawk-like Cuckoos (*Hierococcyx*), and the *Bhokatáko*-group never assume the hepatic phase of plumage, which again is common in the species of *Polyphasia* (*Cacomantis*) and *Chrysococcyx.*

203. CUCULUS MICROPTERUS.

Hab. All India, with Ceylon, the Himálaya, Tenasserim provinces, Cambogia, China, and Java.

204. CUCULUS AFFINIS.

From the Himálaya and Malayan Peninsula. This and the preceding race differ only in size; and the larger, *C. affinis,* I have only seen from the localities named, though numerous specimens of it from those two localities. They correspond in size to *C. canorus* and *C. striatus* respectively, but have a comparatively large bill, pale dusky-brown irides, embrowned grey upper parts and rather widely barred lower parts from the breast, tail but slightly graduated, except its outermost feathers, and a peculiar unbarred nestling-plumage, with much white bordering the feathers above. The smaller race is the familiarly known *Bhokatáko* of India (so designated from its note), which is commonly kept as a cage-bird by the natives. Col. Tytler remarks that the note of the *Bhokatáko* is very like that of the Himalayan *Pomatorhinus erythrogenys*. As he observes, *Bhow kuttah kho* signifies in Bengali, "Daughter-in-law, tell a tale"; and there is quite an Ovidian story of a metamorphosis connected with the name. He further remarks that "the note sounds very like a double 'cuckoo,' thus, '*cuckoo-cuckoo*'" (Ann. Mag. N. H. 1854, xiii. 367). The larger of the two races is evidently that observed in Eastern Siberia by Herr Radde, as noticed in the 'Natural History Review' (Oct. 1865, p. 459). He alludes to its "double note," referring doubtless to its double cuckoo-cry, which would thus be similar to that of the other and smaller race.

205. HIEROCOCCYX VARIUS.

I am not sure that I have seen this species, as recognized by Dr. Jerdon and myself, from "Burmah and Malayana;" but it probably extends over the Indo-Chinese countries, though not passing into the Malayan peninsula. It is common in the Dacca district of Eastern Bengal.

206. HIEROCOCCYX NISICOLOR.

I have now seen several examples of this bird, all from the South-eastern Himálaya, and am well satisfied that it is a distinct race. The largest adult measured 7 inches in length of wing. Mr. Hodgson figures it with white irides! Horsfield's only specimen of *H. fugax* in the India Museum is in immature plumage, and quite resembles that figured as *Cuculus sparverioides* by Von Schrenck; Mr. Swinhoe showed me a similar specimen from China, and Mr. Wallace has one from Borneo, while Dr. Sclater's supposed *H. varius* from Borneo (P. Z. S. 1863, p. 209) is sure to be no other; again, it is the Chinese *H. nisicolor* nobis (J. A. S. B. xxx. p. 93); and I consider that *C. flaviventris,* Scopoli (founded on Sonnerat's *Coucou à ventre rayé de l'Isle de Panay*), *C. radiatus,* Gm., *H. pectoralis,* Cabanis, and *H. hyperythrus,* Gould (B. As. pt. viii.), represent the mature plumage of the same species, which should accordingly stand as *H. flaviventris* (Scop.), from China, Philippines, Borneo, and Java, being probably also that noticed from Malacca by Mr. F. Moore (P. Z. S. 1859, p. 459).

207. HIEROCOCCYX SPARVERIOIDES.

The *H. strenuus,* Gould (B. As. pt. viii.), from the Philippines, may yet prove to be only a remarkably fine specimen of *H. sparverioides,* which I have repeatedly seen in Malacca collections; but I nevertheless suspect that it will turn out a distinct race: the unique skin in the British Museum has unusually broad tail-feathers, but it at least requires to be confirmed as a species (or particular race) by the occurrence of additional specimens. There is also in the British Museum the unmounted skin of an adult received from Nipâl, which is like *H. sparverioides,* but conspicuously smaller, the wing measuring 7·5 inches. This seems to me to exemplify even another distinct race, which I will provisionally call H. NISOIDES. These various Hawk-like Cuckoos have a nestling-plumage which considerably resembles that of *Accipiter,* being equally distinct from that of the *Bhokatáko*-group, and from that of the group exemplified by *C. canorus**.

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* Dr. Jerdon and I went carefully over an extensive series of Indian Cuckoos, and we quite agreed as to the species. I have since examined many other collections, inclusive of those in the British Museum, India Museum, the Derby Museum of Liverpool, the private collection of Mr. Wallace, and others, and find no reason to modify the opinions attained in Calcutta, except as regards the nomenclature in a few instances, which is now sufficiently in accordance with that adopted by Prof. Schlegel.

The different races of *Hierococcyx* appear to me to be quite as distinct as are the different admitted species of *Tetraogallus, Satyra, Phasianus,* or *Perdix cinerea, P. barbata,* and *P. hodgsoniæ,* and therefore to have just the same claim to be separately recognized. Of the considerable number of specimens that I have examined, I do not perceive that the different races of Hawk-like Cuckoos run into each other, and therefore I feel some

208 and 209. POLYPHASIA NIGRA and P. TENUIROSTRIS.

Barely separable, and included by Prof. Schlegel under *Cuculus passerinus,* Vahl, as distinguished from the Malayan *C. merulinus* (*C. flavus,* &c.). In the Malayan Peninsula *P. tenuirostris* occurs at Pinang, and the smaller *P. merulina* at Malacca.

214. EUDYNAMIS ORIENTALIS. (Egg figured in Jard. Contrib. Orn. pl. 52.)

All India with Ceylon, Indo-Chinese countries (including Siam and Cambogia), China, and Malayan Peninsula. In Sumatra (*fide* Bonaparte), Java, Philippines, Lombok, Flores, Timor, and Australia (*vide* Ibis, 1865, p. 32), replaced by *E. mindanensis* (L.) (*E. australis,* Swainson, *E. flindersi,* Gould, B. Austr. iv. pl. 91), which is not the supposed *E. flindersi* of New Zealand referred to by Dr. Jerdon. Prof. Schlegel unites the Indian and Australian Coels, but I have always found them manifestly distinct, the Australian being considerably larger, with a greenish instead of a bluish gloss on the black male, and the nestling-plumage decidedly different. There is a fine series of both races in the Derby Museum at Liverpool. Length

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confidence in the opinion that the single specimen which I have called *H. nisoides* denotes a peculiar race, which should be sought for in Butân (as also *Hierax melanoleucus, Alcedo grandis, Indicator xanthonotus,* and other Sikhim rarities). There certainly is not that fusion of different races which we observe in the instances of the Indian and Indo-Chinese Rollers and in different specific races of *Gallophasis.*

The *voice* differs exceedingly in *Cuculus canorus, C. striatus,* and *C. poliocephalus.* That of *Hierococcyx sparverioides* is "very similar" to that of *H. varius,* and probably also of other specific races of this form. The vehement whistling cry of the *Chok-gallos* or Hawk-Cuckoos is very peculiar among the group. I find that the voice of *H. flaviventris* is described in a note of Mr. Mottley's (P. Z. S. 1863, p. 209):—"A common bird, though rarely seen, from its habit of flying as it were on the upper side of a large branch to utter its monotonous cry. I have repeatedly tried in vain to discover it, when certainly a dozen must have been crying at once all around me! Its note is a loud but soft flute-like whistle, repeated three times, and then once again two notes lower, and is continued for several hours together in the evening." This description certainly does not *exactly* apply to the whistling note of *H. varius* in India.

of wing respectively 8·25 inches and 7·25 inches, and of tail 8·5 inches and 7·5 inches. It is remarkable that various other species of Coel are very locally restricted (but all are within the confines of the great range of distribution mentioned). Thus *E. melanorhynchus* appears to be confined to Celebes; and Mr. Wallace gives *E. punctatus* from Amboyna, Mysol, and New Guinea, *E. ransomi* from Bouru and Ceram, *E. picatus* from Amboyna and Ternate, and *E. facialis* from the Sula Islands, midway between Celebes and the Moluccas. *E. taitensis* of New Zealand (Ibis, 1862, p. 231) is rather of a different type, intermediate between *Eudynamis* and *Cuculus*. It belongs to the Polynesian province of the Australian region, and is noticed from the Fiji Islands in the 'Ornithology of Wilkes's United States' Exploring Expedition' (p. 248 and pl. xxii. f. 2)! I do not think that the birds of this genus are anywhere migratory, or only to a slight extent, if at all so. A pair of the Indian Coel are now living in the Gardens of the Zoological Society.

213. COCCYSTES COROMANDUS.

The nestling young is figured by Mr. Hodgson, a good deal like that of *C. melanoleucus*, but of course with no white on the tail-feathers.

215. ZANCLOSTOMUS TRISTIS.

Obtained by the late M. Mouhot in Cambogia. The *Z. javanicus* (Horsf.) (*Cuculus erythrorhynchus* of the Paris Museum), noticed by Dr. Pucheran (Rev. Zool. 1852, p. 475), was most assuredly never obtained in Bengal, though its range extends to the Southern Tenasserim provinces.

223. ARACHNOTHERA MAGNA.

Occurs in the Tenasserim provinces (J. A. S. B. xxviii. p. 416), and a beautiful allied species in Pegu, *A. aurata*, nobis (J. A. S. B. xxiv. p. 478).

224. ARACHNOTHERA PUSILLA.

Mr. Wallace has an example of this species from Sumatra; and I have seen it from Malacca.

234 and 235. ARACHNECHTHRA CURRUCARIA (Linn.), and A. LOTENIA (Linn.), Gould, B. As. pt. viii. pls.

236. DICÆUM COCCINEUM (Scopoli); Gould, B. As. pt. vi. pl.; P. Z. S. 1863, p. 219.

I observed this species in remarkable abundance in the vicinity of Mergui Station. Its nest is described by Messrs. Mottley and Dillwyn in their 'Contributions to the Natural History of Labuan' (p. 18).

240. PIPRISOMA AGILE.

This species might very well be referred to *Prionochilus*, bearing the same relationship to the bright-coloured Malayan species that *Dicæum concolor* and *D. minimum* bear to the vividly-coloured species of their genus. Capt. Beavan has lately obtained the nest, which he mentions as a very interesting structure. Apparently a second Indian—or rather Cingalese—species of *Prionochilus* exists in the *Pardalotus pipra*, Lesson (Cent. Zool. pl. 26.) Neither *Prionochilus* nor *Pachysoma*, I think with Mr. Wallace, belong to the *Dicæum* series, but are more akin to the Australian form *Pardalotus*.

241. MYZANTHE IGNIPECTUS, Hodgs.; Gould, B. As. pt. vi. pl.

245. CERTHIA DISCOLOR.

According to Dr. Jerdon, this species "makes the nearest approach to *C. familiaris* of Europe." I do not concur in this statement. *C. himalayana* is the Eastern representative of *C. familiaris*, while *C. nipalensis* and *C. discolor* have conspicuously shorter bills and longer tails. An American species which comes very near to *C. himalayana* is *C. mexicana*, Gloger (Baird, B. Am. pl. 83. fig. 2). It is remarkable that *C. himalayana* likewise occurs in Afghánistân, from which direction it may have reached and spread over the North-western Himálaya.

246. SALPORNIS SPILONOTUS (Franklin); Gray and Mitchell, Ill. Gen. Birds, pl. 44. f. 1.

I have given elsewhere a more detailed description (Ibis, 1865, p. 48). Mr. G. R. Gray (Br. Mus. Cat. Nipal) places *Certhia himalayana*, Vigors (*C. asiatica*, Swains.), as synonymous with *C. spilonota*, Franklin, and gives Nipâl as the habitat! Neither of these species is known to inhabit Nipâl; and Mr.

Hodgson obtained his specimens of *Salpornis* from Behar. The latter genus is not distantly allied to the Australian form *Climacteris,* and also shows some approach to the Mexican *Campylorhynchus megalopterus,* Lafresnaye, as figured by M. O. DesMurs (Icon. Orn. pl. 54). It is curious to observe how the combination of Tree-creeper and Nuthatch, as shown in these genera, is reversed in the *Dendrodromus leucosternus,* Gould (figured in 'Zoology of the Voyage of the Beagle,' *Aves,* pl. 27).

251. SITTA CINNAMOMEIVENTRIS.

This species (and not *S. himalayensis,* as averred by Mr. Gould, and after him by Dr. Sclater, Ibis, 1865, p. 309) is "the Himalayan form of *S. europæa,*" resembling the latter exactly in size and structure, but in colouring (which differs in the sexes) *S. castaneiventris* (*S. castanea,* Lesson): the last is smaller and less robust, with a considerably more slender bill (much as in the American *S. aculeata,* Cassin, as distinguished from *S. carolinensis*; *vide* Baird's 'Birds of America,' pl. xxxiii.), while *S. himalayensis* is also a smaller bird, with proportionally much shorter bill—that is, wider and more depressed at base. The Palestine Nuthatch, erroneously referred to *S. krueperi* (Ibis, 1865, pl. vii.) by Mr. Tristram (P. Z. S. 1864, p. 433), would seem to correspond with the female of *S. cinnamomeiventris* (*cf.* Mr. Gould's figure, B. As. pt. i.). The last-named species is confined to the Himálaya (unless spreading westward, as to Palestine?), its range not extending "far and wide over the districts of India" as asserted by Mr. Gould—a statement which in this genus will apply only to *S. castaneiventris.* *S. syriaca* is common in Afghánistân.

253. DENDROPHILA FRONTALIS.

A beautiful second species of this genus exists in the Javan *D. azurea* (Lesson); *D. flavipes,* Swainson; Gray and Mitchell, Ill. Gen. Birds, pl. 45.

255. UPUPA CEYLONENSIS, Reichenbach.

Noted from Java by Dr. Cabanis, but doubtless the common Indo-Chinese race (*U. longirostris,* Jerdon), which again is that observed in Siam by the late Sir R. H. Schomburgk (Ibis, 1864, p. 247), and which was referred to *U. nigripennis* by Mr.

Gould (P. Z. S. 1859, p. 151). The Indo-Chinese Hoopoe is merely much deeper-coloured than *U. epops* of Bengal, &c., while that of Southern India and Ceylon is likewise deeper-coloured, but also smaller, though with the same length of bill, and neither of the two rufous races shows any white (or only the merest trace of it) at the extremity of the crest-feathers.

256. LANIUS LAHTORA.

In Dr. Heuglin's list of birds collected in the Red Sea, it is remarked that this Shrike was "observed on the island of Agig (18°–19° N. lat.), on Dahalak, and near Tadjura" (Ibis, 1859, p. 342). It is perhaps not uncommon in the Arabian Peninsula; but may not Dr. Heuglin's bird be *L. algeriensis*, Lesson? (*Cf.* Strickland, P. Z. S. 1850, p. 217.)

259. LANIUS NIGRICEPS, Frankl.; Gray and Mitchell, Ill. Gen. Birds, pl. 71.

262. LANIUS ARENARIUS.

For the distinction between this race and *L. isabellinus*, Ehrenberg, Mr. Strickland's paper (P. Z. S. 1850, p. 217) should be consulted.

265. TEPHRODORNIS PONTICERIANA.

Noticed from Singapore in the Ornithological Report accompanying the narrative of Commodore Perry's Expedition to Japan. *T. superciliosa*, Swainson, of Java is admitted as distinct by Dr. Cabanis. Dr. Jerdon mentions *T. gularis*, Raffles, "from Malacca and the isles" (ii. 411). The peninsular species is quite distinct, and may stand as *T. sordida*, Wallace.

266. TEPHRODORNIS GRISOLA.

Dr. Sclater (P. Z. S. 1863, p. 217) refers a Bornean specimen of this bird, which I identified for him, to the genus *Pachycephala*. The only Indian specimen that I ever saw of it was shot by myself in the Calcutta Botanic Garden. Aiming at a *T. ponticeriana*, I brought down both that bird and the present one, which happened to be in the same line of shot*. Specimens were subsequently received from Arakan, the Andamans, and

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* I obtained the only Lower Bengal specimen of *Mirafra cantillans* in the same way.

Java. There can be little doubt that this bird is the *Hyloterpe philomela* (Cab.), as suggested by Dr. Sclater (*loc. cit.*).

267. HEMIPUS PICATUS.

Under this name two very distinct species are brought together by Dr. Jerdon :—*H. capitalis* (M'Clell., 1839; *H. picæcolor*, Hodgson, 1845) of the Himálaya, which is larger, with proportionally longer tail, and has a brown back; and *H. picatus* (Sykes) of Southern India and Ceylon, which has a black back. Mr. Wallace has good series of both of them.

HEMIPUS CAPITALIS has accordingly to be added tò the birds of India.

268. CAMPEPHAGA SYKESI.

Common in Ceylon. Here it may be remarked that *Ceblepyris cærulescens*, nobis (J. A. S. B. xi. 403, xv. 308), from Luzon, is the female of *C. aterrima*.

270. GRAUCALUS MACII, Lesson; "*G. dussumieri*, Vieillot," Pucheran: from Bengal.

Two Indian species of this genus have hitherto been confounded, that inhabiting Southern India and Ceylon being new and undescribed. *G. macii* and *G. javensis* only differ in size, the latter being much smaller. Both have the wings white underneath and the outer tail-feathers broadly tipped with white. G. LAYARDI, nobis (*G. papuensis* of Sykes's and Jerdon's catalogues; *Campephaga macii*, Layard), is of the same small size as *G. javensis*, having the wing 6 inches, and tail 4 inches. In *G. macii* the wing is 7 in., and tail 5·25 inches. *G. layardi* has the anterior surface of wing underneath strongly barred, and the outer tail-feathers are very slightly white-tipped. Another difference is, that in the female (or perhaps the young) of *G. macii* the under parts are throughout faintly barred, while in that of *G. layardi* the abdominal region only is barred, but with much broader and more distinct bars than in the other.

271, 272, 275, 276. PERICROCOTUS SPECIOSUS, P. FLAMMEUS, P. ROSEUS, and P. PEREGRINUS. Gould, B. As. pt. ix. pls.

Mr. Gould doubts the identity of *P. speciosus* from the Indo-Chinese countries with that of North-eastern India. I do not believe that the slightest difference exists, having compared numerous specimens from both localities. The *P. flammeus* of the Western Himálaya, noticed by Dr. A. L. Adams (P. Z. S. 1859, p. 182), must surely be either *P. speciosus* or possibly *P. solaris,* though I doubt if the latter be there met with. In the India Museum are fine specimens of *P. flammeus* from Southern India, and others from Asám illustrative of *P. elegans* (M'Clelland, P. Z. S. 1839, p. 156); but I am quite unable to distinguish them (*cf.* J. A. S. B. xviii. p. 279).

273. Pericrocotus brevirostris.

I doubt if this bird ever visits "Lower Bengal" as Dr. Jerdon, probably by a slip of the pen, asserts*.

278. Dicrurus macrocercus.

Obtained by the late M. Mouhot in Cambogia.

284. Edolius paradiseus.

The races of this bird are most difficult to understand, as they seem to pass into each other, so that *E. malabaricus* can barely be distinguished. I have before noticed the extraordinary mocking-powers of the *Bhimráj* (Ibis, 1860, p. 99). A good one would be a very attractive object in the Zoological Gardens. For *E. rangoonensis* (p. 438) read *E. viridescens.*

286. Chibia hottentota.

Obtained in Cambogia by Mouhot. A living example was lately in the Zoological Gardens. I never before saw it in confinement.

287. Artamus fuscus.

Specimens from Macao are noticed in the Ornithological Report accompanying the narrative of Commodore Perry's

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* *Pericrocotus* is one of the genera characteristic of the Indian region. The Malayan species are: *P. xanthogaster,* Raffles (♀ *Ixus flammeus,* Temminck, Pl. Col. 263), of the Malayan Peninsula and Sumatra; *P. miniatus,* Temm. (Pl. Col. 156), of Western Java; *P. exul,* Wallace, of Eastern Java and Lombok; and *P. ardens,* Boie; *P. igneus,* Blyth, and *P. minutus,* Strickland (Contrib. Orn. pl. 31), of Malacca and Sumatra. *P. flagrans,* Boie, of the Malayan Peninsula, Sumatra, and Borneo, is a richly coloured *P. peregrinus. P. cinereus* of South China and the Philippines has also been received from Pinang, and should therefore inhabit the more eastern Indo-Chinese countries.

Expedition; but I cannot understand its being termed "a bird of solitary habits"! This is Mr. Heine's observation, as quoted*; but he also states that *Lorius domicella* had been "frequently observed in the woods of the island of Singapore"! Of the great number of Lories brought to Singapore, probably now and then one manages to escape, and may be seen flying about loose, as *Melopsittacus undulatus* is occasionally now seen in England.

288 and 289. TCHITREA PARADISI and T. AFFINIS.

In these birds the crest never appears as represented in Mr. Gould's figures (B. As. pt. iv.), but rises abruptly and straight up from the vertex, as in *Otocompsa emeria* (no. 460) and *Rubigula flaviventris* (no. 456); hence the names *Shah Bulbul, Sultána Bulbul,* and *Hosseini Bulbul,* applied by the natives, who associate the *Tchitreæ* with the common Crimson-eared Bulbul more especially. The nest is like that of a Bulbul, and the eggs (as figured in one of Mr. Hodgson's drawings) are reddish-white, with some crimson spots at the larger end.

290. MYIAGRA AZUREA.

I have known a bird of this species take up its abode for many days together in a spacious verandah attached to a dwelling-house, preying on the house-flies and mosquitos. Occasionally I have met with it very numerously in Lower Bengal. The cobalt-blue bill and erect occipital rudimentary crest, however short, indicate its near affinity to the *Tchitreæ,* which is very obvious in living or freshly killed specimens.

291. LEUCOCERCA FUSCOVENTRIS (Lesson); "*Muscicapa albogularis* et *Platyrhynchus albicollis,* Vieillot," Pucheran, Arch. du Mus. vii. p. 372.

The nest and eggs are figured in Sir W. Jardine's 'Contributions to Ornithology' (pl. 92).

292. LEUCOCERCA AUREOLA (Vieillot); "*Rhipidura aureola,* Vieillot," Pucheran (*op. cit.* p. 373); *R. albofrontata,* Franklin.

I much suspect that my *L. compressirostris,* from Ceylon, was founded on a mere *individual* variety.

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* Mr. Swinhoe doubts its being found about Macao (Ibis, 1862, p. 306).

293. LEUCOCERCA LEUCOGASTER (Cuvier); "*Muscicapa leucogaster,* Cuvier," Pucheran; *L. pectoralis,* Jerdon; *Rhipidura fuscoventris,* Sykes, as noticed in Dr. Jerdon's Appendix.

294. CHELIDORHYNX HYPOXANTHA.

The nest and eggs are figured in one of Mr. Hodgson's drawings in the British Museum,—the former as in the *Leucocercæ;* the latter white, faintly speckled.

295. CRYPTOLOPHA CINEREOCAPILLA.

Young figured by Mr. Hodgson with mottled plumage (!), dusky above with pale spots, below dull whitish, the head tinged with ferruginous.

296. HEMICHELIDON FULIGINOSA.

Col. Tytler mentions having obtained three specimens of this bird in the neighbourhood of Barrackpore, near Calcutta (Ann. Mag. N. H. 1854, xiii. p. 371). The egg is figured by Mr. Hodgson pale greenish, with faint rufous specks.

299. ALSEONAX FERRUGINEUS.

Nest and eggs figured by Mr. Hodgson,—the former much as in the British *Butalis grisola,* the latter pure buff colour and unspotted.

301. EUMYIAS MELANOPS.

Mr. Hodgson figures the egg unspotted pinkish-white.

305. CYORNIS JERDONI, G. R. Gray.

The Malayan and Philippine race (*C. banyumas,* Horsf.; Pl. Col. 226) is deeper-coloured than the Indian, having the lores, cheeks, and chin blackish (instead of distinctly blue), while the blue of the upper parts and ferruginous of the lower parts are likewise more intense. The same slight difference distinguishes the Malayan *C. elegans* (Pl. Col. 596. f. 1) from the Indian and Tenasserim *C. rubeculoides.* Mr. Wallace, however, has a specimen of true *C. jerdoni* from Pinang. Mr. Swinhoe describes a beautiful allied species from Formosa, *C. vivida* (Ibis, 1864, p. 363). [*Vide infrà,* Pl. XI.]

308. CYORNIS MAGNIROSTRIS.

The male of this fine species is figured in one of Mr. Hodgson's drawings. It is much like that of *C. rubeculoides,* but of a darker blue above, with the lower parts bright ferruginous, except just the middle of the belly and the lower tail-coverts, which are pure white.

309. CYORNIS PALLIPES.

Mr. Wallace has a nearly allied *C. rufifrons* from Borneo.

311. MUSCICAPULA ÆSTIGMA.

In one of Mr. Hodgson's drawings in the British Museum are beautifully represented, together and contrastingly, four nearly allied species, viz. *M. superciliaris* (*Muscicapa hemileucura*, Hodgson), *M. æstigma, M. ciliaris,* and *M. leucoschista.* The two latter have to be added to Dr. Jerdon's list; and the second he regarded as dubious in his Appendix (p. 876). *M. æstigma* is plain blue above, white below, with no white on the tail: one figure in another drawing has a white superciliary line, which the other has not; so that there may yet be a second species here. M. LEUCOSCHISTA is like *M. superciliaris*; but the white on the throat is much broader, there is less of blue on the sides of the breast, and no white on the tail-feathers. M. CILIARIS is of a darker and duller blue above, with white superciliaries commencing from nostrils, the greater coverts and outer webs of tertiaries white, as are also the entire under parts.

315. NILTAVA MACGRIGORIÆ.

Nest figured by Mr. Hodgson in a slight hollow of a tree, with pinkish-white eggs.

321. SIPHIA SUPERCILIARIS (Blyth); ♂ *Muscicapa tricolor* and ♀ *M. rupestris*, Müller. (*Cf.* Ibis, 1865, p. 44.)

Specimens in the Derby Museum of Liverpool. The female is ashy above, beneath rufous, paler on the breast and vent; superciliaries pale rufous; wing and tail-feathers pale brown, slightly washed on the outer webs with light rufous. One tail-feather (a new one), in the Timor specimen, bluish as in the male. Mr. Wallace has a *Siphia rufigula* from Northern Celebes.

323. ERYTHROSTERNA LEUCURA.

Probably *Muscicapa rufogularis*, Brehm, as distinguished from his *M. parva*. The true E. PARVA (Bechstein; *Saxicola rubeculoides*, Sykes) I have seen from the Deyra Doon and from the Dukhun, and must therefore be added to the Indian list.

325. ERYTHROSTERNA ACORNAUS.

Figured in summer plumage by Mr. Hodgson, with pale rufous lores, throat, and fore-neck, as also in the mottled plumage of immaturity. It is readily distinguished from *E. pusilla* by the colour of the rump-feathers.

326. ERYTHROSTERNA MACULATA.

Female dull slaty-brown above, white beneath, with rufescent tail unmarked with white (Hodgson's drawings). Also from Timor (Ibis, 1865, p. 44)! A specimen received in a Javan and Moluccan collection by the Asiatic Society, Calcutta, from that of Batavia. *Muscicapa solitaria,* Müller, (p. 434) is an *Anthipes* (Ibis, *loc. cit.*).

327 and 328. TESIA CASTANEOCORONATA and T. CYANIVENTER; Gould, B. As. pt. x. pls.

A third species of the genus exists in the *Micrura superciliaris,* Bonap., from the mountains of Java.

333. TROGLODYTES NIPALENSIS, Hodgs.; Gould, B. As. pt. iv. pl.

Brachypteryx leucophrys (p. 496) is figured as a *Myiothera* by Temminck (Pl. Col. 448. fig. 1). It is evidently the female of a species of which the male would be cyaneous where its mate is brown, and the name implies a special resemblance to *B. montana* and *B. cruralis.* The sexual diversity of colouring in this genus is just that of so many of the *Myiotherinæ* and *Thamnophilinæ* of South America.

339. CALLENE RUFIVENTRIS.

Female brown, with the abdominal patch whitish instead of rufous. Not unlike *Muscicapa longipes,* Garnot (Voy. de la Coquille, Atlas, pl. xix. f. 1), assigned to New Zealand! But no such bird is given in Mr. G. R. Gray's list (Ibis, 1862, p. 214).

340. CALLENE FRONTALIS.

The female is figured together with the male in one of Mr. Hodgson's drawings in the British Museum. Dusky brown above, with pale centres to feathers; below paler, with dull albescent spots. (Immature plumage?) Nest domed and like a Wren's, with clay-coloured eggs.

346. PITTA NIGRICOLLIS.

Mr. Hodgson figures the egg as reddish-white with rufous specks.

347, 348, and 349. HYDROBATA ASIATICA, H. CASHMIRIENSIS, and H. SORDIDA; Gould, B. As. pt. xii. pls.

I have lately seen a fine specimen of *H. cashmiriensis* in a Sikhim collection. May not this be the *Cinclus aquaticus* of Herr Radde from North-eastern Asia?

351. PETROCOSSYPHUS CYANUS.

The curious fact of a bird of this species attacking and devouring a luckless *Phylloscopus trochilus* has been noticed (Ibis, 1860, p. 139). I suspect that this is not more anomalous than Mr. Layard's instance of a captive *Megalæma zeylanica* which evinced a similar predatory propensity (Ann. Mag. N. H. 1854, xiii. p. 446). The *Turdus* (*Monticola*) *erythroptera*, G. R. Gray (P. Z. S. 1860, p. 350), from Gilolo, is no other than *P. affinis*, a variety of *P. cyanus*!

352. OREOCÆTES ERYTHROGASTRA (Vigors); Gould, B. As. pt. xv. pl.

I suspect that the name "Rock-Thrush," applied by Mr. Gould to this species, is not better suited to its habits than Mr. G. R. Gray's generic appellation, the *Oreocætæ* being forest-birds, unlike the *Petrocossyphi*. The egg as figured by Mr. Hodgson is like that of an English Robin.

355. GEOCICHLA CITRINA (Lath.); "*Turdus albonotatus*, Cuv.," Pucheran.

Temminck gives Java and Sumatra as habitats, but refers to *G. rubecula*, Gould, which has a deeper colouring. I kept a Thrush of this species for a long while in a cage; and it had a plaintive mellow song, somewhat Robin-like and little varied.

356. GEOCICHLA UNICOLOR (Tickell); *Merula unicolor*, Gould, B. As. pt. x. pl.

Mr. Gould states that I do not include this species in my 'Catalogue of the Birds in the Asiatic Society's Museum, Calcutta.' It is no. 954 of that Catalogue! And he calls it the "Afghan Thrush," which is a misnomer, though it may perhaps sometimes stray into Afghánistàn. In Lower Bengal it is not uncommon as a cold-weather visitant.

357. TURDULUS WARDI.

To this subgroup must also be referred *Turdus interpres*, Temm. (Pl. Col. 432; *T. avensis*, Gray), which is nearly allied to *T. wardi*, but has a chestnut-rufous cap and nape; from Lombok (Wallace), and Sumatra and Java (Temminck). Also *Geocichla erythronota*, Sclater (Ibis, 1859, p. 113), from Celebes, like *T. interpres*, but having the whole back, as well as the head, chestnut-rufous. Also *T. peroni*, Vieillot (Pucheran, Arch. du Muséum, vii. p. 352, pl. xix.); *Geocichla rubiginosa*, Müller, from Timor. Also *T. cardis* (Pl. Col. 518; Faun. Japon., Aves, tab. xxix., xxx.). The remarkable dissimilarity of the sexes in *T. wardi* and *T. cardis* should indicate a corresponding diversity of plumage in those of their immediate congeners.

358. TURDULUS CHRYSOLAUS (Temm. Pl. Col. 587; Faun. Japon., Aves, tab. xxviii.).

This species, my *Geocichla dissimilis* (olim), is not *T. cardis*. It cannot be placed in a different division from *T. unicolor* and other *Geocichlæ*. I remember sending a coloured drawing of the specimen shot in the Calcutta Botanic Garden to Sir W. Jardine. When Col. Tytler wrote, in his "Fauna of Barrackpoore" (Ann. & Mag. N. H. 1854, xiii. p. 370), of *G. dissimilis* that it is "often found in groves of trees: it is very singular that, out of the numbers shot, a male is seldom or never procured; this latter, when in fine adult plumage, is distinguished from the sombre colour of the female by the bright reddish streaks [colour?] on its flanks," he supposed the female of *G. unicolor* to be that of *G. dissimilis* (*G. chrysolaus*), concerning which latter he wrote from memory of the single specimen he had seen in the Calcutta Museum.

361, 362, 363. MERULA BOULBOUL*, M. ALBOCINCTA, and M. CASTANEA; Gould, B. As. pt. xi. pls.

M. vulgaris is mentioned by Dr. A. L. Adams as "a common cage-bird in the towns of the Punjab; said to be imported from Afghanistan. Not a native of the Western Himalayas; as far westward as Peshawur, but probably found in the Hindoo Coosh Chain" (P. Z. S. 1858, p. 490; *vide* also J. A. S. B. xvi. 780). Col. Tytler, in his "Fauna of Barrackpoore," remarks that "the *Turdus atrogularis* and *Merula boulboul* sometimes make their appearance, but this is very rarely the case; I only saw one of each species" (Ann. Mag. N. H. 1854, xiii. 370). Not long ago I repeatedly heard a wild English Blackbird give the exact song-note of *M. boulboul*, at least of one which I long kept in a cage; but I have heard no other English Blackbird do so. The song of the Himalayan Blackbird is equally mellow, but much less deep in tone. *M. castanea* occurs in Afghánistân. The *Turdus javanicus*, Horsfield (*T. fumidus*, A. Müller), might range either in *Merula* or *Geocichla*; it is uniform brownish-slaty, with rufous belly.

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* Mr. Gurney (Ibis, 1864, p. 351) would seem to refer the *Lanius boulboul*, of Latham, to a species of *Laniarius*.

364. PLANESTICUS RUFICOLLIS (Pallas); Radde, Reisen &c. ii. taf. viii.

Occurs in Afghánistân.

365. PLANESTICUS ATROGULARIS (Temm.); *Merula leucogaster*, nobis (olim), founded on a drawing of a very dark specimen of an old male.

366. PLANESTICUS FUSCATUS.

Herr Radde figures what he considers to be a hybrid between this species and *P. ruficollis* (Reisen &c. ii. taf. vii. *a*) (*vide* N. H. Review, 1865, p. 464).

372. OREOCINCLA NILGIRIENSIS, Blyth; *Zoothera imbricata*, Layard, Ann. & Mag. N. H. 1854, xiii. p. 212.

Identified from the specimen in the British Museum described by Mr. E. L. Layard. Thus both this species and *Turdulus wardi* have been described as belonging to the genus *Zoothera*, which genus I regard as merely a further developed *Oreocincla*, rather than as appertaining to the oriental division of the *Myiotherine* series.

[To be continued.]

XXX.—*Notes on the Ornithology of Spain.*
By Lord LILFORD, F.L.S., F.Z.S., &c.

(Plate X.)

[Concluded from p. 187.]

WE remained at Aranjuez till May 27th; but during the latter part of our stay I was unfortunately prevented by rheumatic gout from taking a very active part in collecting. Manuel, however, was indefatigable, and I was occasionally able to drive out and take some small share in his proceedings. In the neighbourhood of Las Ynfantas, a guard-station and horse-breeding establishment about four miles from Aranjuez in the direction of Toledo, we found a good many interesting birds. The country about this spot consists of low hills totally uncultivated, with here and there large flat or slightly undulating expanses, the whole covered with gum-cistus, rosemary, lavender, Spanish broom, several species of thyme, and many other low-growing shrubs, with an infinite variety of wild flowers. The railway runs parallel to the road from Aranjuez to Toledo, and separates the country just described from the marshy *Soto* on the banks of the Tagus, this *Soto* being in some parts under cultivation, and in others thickly wooded with common and white poplars, planes, oaks, willows, tamarisks, and so forth. The avenue along the road above mentioned is perhaps one of the finest in the world, and affords a congenial home to many species of birds.

On May 9th I rode out to Las Ynfantas, where Manuel was established, and found that he had shot several Rock-Sparrows (*Petronia stulta*), which were breeding about the guard-house, and in the woodwork of an old aviary now empty, but formerly tenanted by Peafowls and Pheasants. On our way I observed a beautiful Hobby (*Hypotriorchis subbuteo*), but could not get a shot at him; I shot a few Bee-eaters and a brilliantly-coloured Common Cuckoo. We were prevented by heavy showers from extending our researches to any great distance from the station; but we managed to bag a Little Bustard (*Otis tetrax*), four Spotted Cuckoos, several couples of Quails, two good specimens of the Sardinian Starling (*Sturnus unicolor*), and the only common Nightjar (*Caprimulgus europæus*) which came under my notice in Spain. We here saw the first Rollers of the season, but did not on this occasion succeed in adding one of these birds to our collection. On the following day, however, in the *Soto*, at this same locality, we shot seven beautiful examples of this species, and also obtained four of the Red-necked Nightjar (*Caprimulgus ruficollis*), and the same number of the Lesser Kestrel. We also met with the Garden Warbler (*Sylvia hortensis*) in great abundance, besides many other species already mentioned, and took a nest with two eggs of the Black Kite.

During the next few days Manuel was obliged to be at Madrid, and I was too lame to do much; but I rode about the country, and, with the assistance of Agapo, procured several eggs of some interest, amongst others those of the Red-necked Nightjar and Little Ringed Plover (*Ægialitis minor*). The mode of breeding of the first named exactly resembles that of its congener; the eggs, two in number, are laid on the bare ground, without any semblance of a nest. The nests of the Little Plover were always close to a road or mule-track, and far from any water; the number of eggs is, as might be expected, always four. On May 13th we went by a circuitous route over the Llanos de la Cabina round to Las Ynfantas, and on our way met with the Southern Grey Shrike (*Lanius meridionalis*), which I had not previously seen in Castile. It is by no means common in this locality. We also here found the Black-headed Warbler (*Sylvia melanocephala*), which, though very abundant in the south of Spain, is apparently rare in these parts. It is a remarkable fact that *Cyanopica cooki* should be quite unknown in the neighbourhood of Aranjuez. I could not discover that any of the keepers or woodmen were acquainted with it, although it is so plentiful about Madrid, at a distance of about twenty miles,—the only reason that I can imagine to account for its absence being the want of the evergreen oak, to which it certainly exhibits a very remarkable partiality. Manuel returned from Madrid, bringing several eggs of this Magpie from the Casa de Campo, and on this occasion put me up to the art of securing some Little Bustards, which consists at this season in lying in wait—near a patch of a certain plant with a white flower, which is very common in these plains, but the name of which I do not remember—until one hears a faint clicking note unlike that of any other bird with which I am acquainted, and impossible to describe accurately: this, it appears, is the love-call of the male; and on hearing it Manuel used to signal to me to advance upon the spot whence it came, he keeping in line with me at about a gunshot off. The male bird always rose first, with a great clatter of wings and a sort of crowing chuckle, generally a long shot off, whilst the hen lay close till nearly trodden upon, or sprung by the dogs.

These birds were now pairing, but had not yet begun to lay; I found that, unless the clicking note had commenced, it was merely vexation of spirit to try to get a shot on foot, although on horseback or on wheels one may approach the birds very closely. We found both species of Sand-Grouse (*Pterocles arenarius* and *P. alchata*) in considerable numbers; but it is only by chance that a shot at them is to be got by fair means. I did manage on this occasion to bag a beautiful specimen of the latter species out of a large flock which rose at a long distance. The recognized way of shooting Sand-Grouse in Spain is by waiting at their drinking-places in the early morning and evening during the great heats of summer. Both the above-named species are common in many parts of the Castiles, La Mancha, Murcia, Andalucia, Estremadura, and again in some districts of Aragon and Catalonia. The black-breasted species (*P. arenarius*) is known in Spain as "*Ortega*" or "*Churra*;" whilst *P. alchata* is universally called "*Ganga*." They delight in the barest and most stony localities they can find, and even in hungry Spain are considered "*muy mala carne*." Both species of Bustard are, on the contrary, in my opinion, excellent eating, the *Otis tetrax* taking the place and name of "*Faisan*" at the *tables d'hôte* in Spanish hotels, as the Black Grouse does at those of Northern Italy. The Stone-Curlew (*Œdicnemus crepitans*) is very common in this district, and we shot several of them.

A pair of Golden Eagles soared over our heads as we sat at luncheon; and Booted Eagles (*Aquila pennata*) were continually in sight, beating the country harrier-fashion for rabbits and partridges, which are extremely abundant here. We found the Spotted Cuckoos in the open plain far away from anything worthy the name of tree. The pretty little Spectacled Warblers (*Sylvia conspicillata*) enlivened the solitudes with their lively actions and hurried notes, whilst the four common Spanish Larks kept rising at almost every step. The specimens of *Galerita cristata* which I obtained in Spain are decidedly smaller and more rufous in colouring than the average from other parts of Southern Europe *; and I fancy that Spanish examples of *Melanocorypha calandra* are less distinctly marked than those of Italy; but I have not had opportunities of comparing these last-named birds. Wherever there are trees in this neighbourhood, there are to be found numbers of *Lanius rutilus,* which is the common Shrike of Spain; *Lanius meridionalis* and *Lanius minor* are not uncommon in Andalucia, and *Lanius excubitor* is found occasionally in the north. I have reason to believe that the North African *Teleophonus tchagra* occurs in certain places in the extreme south-west of Spain; but it is certainly not common in any part of the country, and is probably very locally distributed.

From May 15th till the 24th I was quite laid up and unable to leave the house; but Manuel kept M. Michel well employed, bringing in one evening two very fine adult specimens of *Vultur monachus,* which he killed as they were regaling upon the remains of the fox he had shot amongst the rocks of Sotomayor on April 29th, as before mentioned (p. 184). He also brought in several Egyptian Vultures (*Neophron percnopterus*) killed from their nests in the range of cliffs at the spot just mentioned; and Agapo managed with considerable difficulty to procure three eggs of this last-named species, all incubated. The stench from one nest was, he told me, so abominable that even he, hardened as he was by the perpetual consumption of garlic and bad tobacco, could hardly make up his mind to swing himself into the cleft in which it was situated: the cause of this overpowering perfume was an accumulation of putrefying snakes, which both Manuel and Agapo seemed to consider an unusual occurrence. In the other nests nothing more offensive than bones of goats, lambs, and the like was to be found. From Las Ynfantas Manuel brought in an Eagle which I took to be a specimen of *Aquila nævioides*; but Mr. J. H. Gurney, to whose decision in such matters I most respectfully bow, pronounces it to be an Imperial Eagle (*A. heliaca*). This specimen is in a very bleached and singular-looking state of plumage, and in colouring very much resembles the ordinary plumage of *A. nævioides*. Manuel pronounced it to be a very old bird which had long ceased to breed and was leading a solitary life on the wilds of Las Ynfantas.

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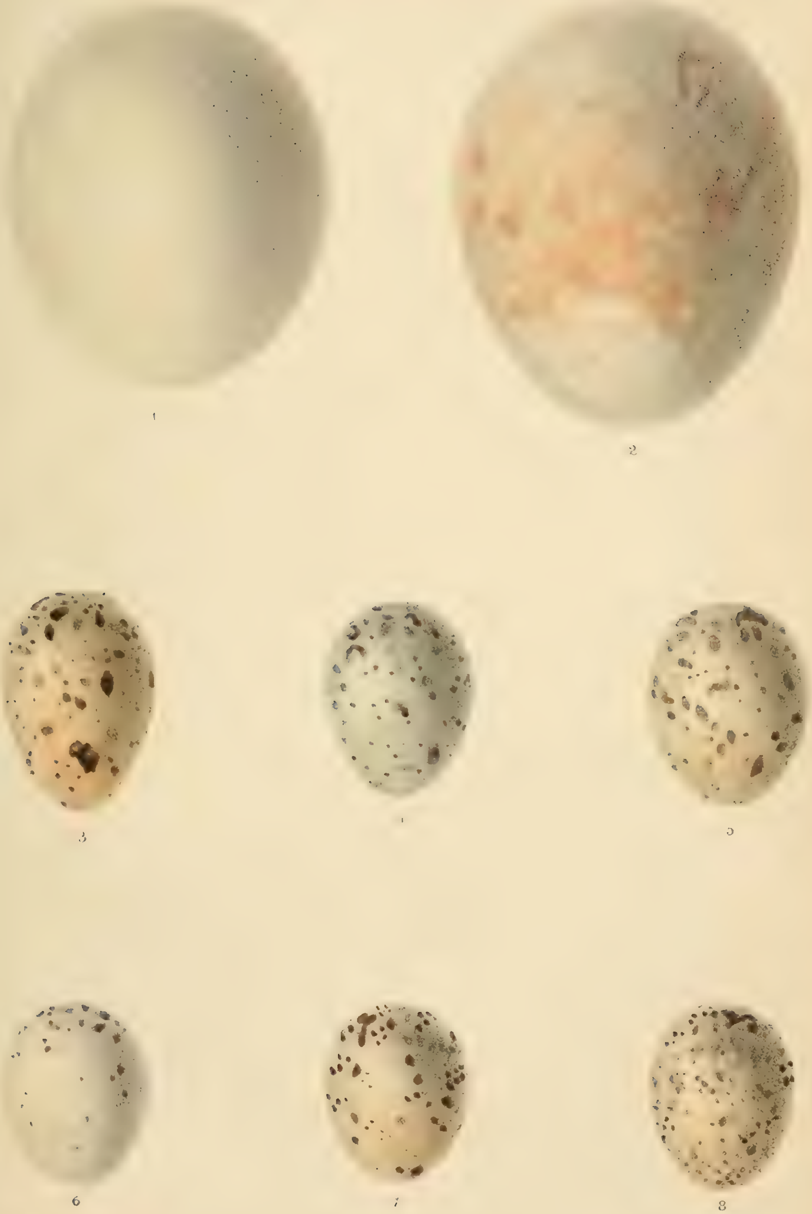
* [This would appear to be *G. theclæ*, L. Brehm, 'Naumannia,' 1858, pp. 210–213.—Ed.]

On May 21st some boys brought in two young Spotted Cuckoos, which fed greedily on chopped beef and hard-boiled eggs, flies, beetles, grasshoppers, and so forth. Agapo brought in three more a few days afterwards; and I succeeded in bringing three of these birds safely to England, and kept them in good health till about the middle of last March, when they all died in one week, though apparently quite strong and well, and certainly very voracious to the last. They are sulky and quarrelsome birds, only interesting from their peculiarities and rarity as cage-birds in this country. We obtained a good many more specimens of birds previously mentioned, and a considerable number of eggs; and on May 26th Manuel knocked down a magnificent male Bustard (*Otis tarda*) which rose at a few paces from the carriage in which we were. We marked him down, and Manuel after a clever stalk got within shot, and gave him the contents of both barrels as he rose. He did not appear to be seriously hurt, and attempted to cross the valley of the Tagus; but a violent squall of wind forced him back towards us, and he fell headlong into a field of standing wheat, in which Manuel, Agapo, and his dog sought him in vain for upwards of an hour. This was the only Great Bustard which we met with near Aranjuez; but the species is common in suitable localities throughout Spain, and several eggs were subsequently brought to me from the environs of Madrid. I was assured in Andalucia that a considerable number of Great Bustards remain in the plains about Seville during the whole year, but that they receive great reinforcements in February and the beginning of March, and that the birds which arrive from the south at that season are always the largest, and are distinguished by the *cazadores* as "*Moriscos.*" In April 1864 I found the Great Bustard in great numbers in the immediate neighbourhood of Seville; and a brother 'Ibis' can bear witness to our vain efforts to procure a specimen, and to the fact that a fine male was brought to our hotel which weighed 32 lbs. English. The Great Bustard is termed in Spanish "*Abutarda,*" as has been often said; the Little Bustard is known as "*Sisson,*" while the Stone-Curlew is "*Alcaravan.*"

We quitted Aranjuez on May 27th, leaving Manuel and M. Michel to collect and skin birds for some days, as it was my intention to remain a short time in Madrid before going to San Ildefonso, and Manuel had insisted that it would be unwise to leave Aranjuez for good without having visited Villamejor, on the road between that place and Toledo, where he expected a rich harvest of raptorial birds, and where he assured me that the Imperial and Booted Eagles bred in considerable numbers. During the few days that we remained at Madrid I paid several more visits to the Casa de Campo, and found the Blue Magpies busily employed in their domestic duties. The nests are placed indiscriminately high and low, often within reach from the ground, and sometimes at the top of a lofty poplar, though I think the olive, the ilex, and the acacia are perhaps the most favoured trees. The nest varies a good deal in material and form, but is for the most part constructed of green moss and hairs on the inside, with a strong outwork of twigs and lichens, in some instances being very hard to distinguish amongst the moss-covered branches of the ilex and wild olives. The average complement of eggs, I should say, is six, though I have several times met with seven, and once or twice found five hard sat upon. As among the large number of eggs of this species which I have obtained there are a good many varieties, I take this opportunity of presenting the readers of 'The Ibis' with representations of a series sufficient to show what the most extreme of them are like (Plate X. figs. 3–8). The birds are very bold and noisy when they have young, but before they have hatched generally slip quietly away, and remain concealed, occasionally uttering a low chiding note. In most cases, where one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nest is found there will be four or five in its close vicinity. I obtained several young birds, and regret very much that I found it impossible to rear them. After a protracted and diligent search, and a good deal of cutting and hewing with a clasp-knife, guided by the chiding of the parent-birds, I succeeded in finding a nest of Cetti's Warblers (*Potamodus cettii*) in a densely-matted briar on the bank of a small stream which runs through these grounds. The young birds appeared to have only just left the nest, and were hopping and chattering in the briars close to it. The nest was built of dead leaves and a few fine grasses, and was placed close to the ground. I several times lifted my gun to shoot at the old birds, but refrained from firing as they were too near me; and most fortunate was it that I was thus prevented, as, on emerging from the thick covert, I found that, had I fired in the direction of the birds, I must almost inevitably have killed a very pretty female specimen of the human species who was engaged in washing clothes within a few yards of me, but whom I had neither seen nor heard till I came out of the thicket. On informing her of her escape, and expressing my satisfaction, she only laughed, and said, with true Spanish coolness, "*Ah, Caballero mio*! I should have gone to heaven, and they would have done nothing to you, as it was an accident."

I found that Severini, the naturalist of the Carretera de San Geronimo, had been on a shooting expedition in the Sierra Morena, and had returned with two fine male specimens of the Spanish Ibex (*Capra hispanica*), one of which I purchased; he also had brought back a nest of the Long-tailed Titmouse (*Acredula caudata*), which he considered a great curiosity, never having before met with the bird or nest; nor did this species ever come under my notice in Spain. I was surprised to find in his shop a fine male Capercally (*Tetrao urogallus*); but I was informed by a gentleman from the province of Asturias that this fine game bird is by no means uncommon in some parts of northern Spain, where it is known as "*Gallo de bosque*," and also occasionally termed "*Faisan*." I have unfortunately, with the exception of a few days spent in Galicia in 1856, never visited any of the northern provinces of Spain; but, from what

I hear, the fauna of those provinces differs very considerably from that of the central districts, and of course still more from that of the Andalucias. I am told, on good authority, of pine-clad mountains whose fastnesses are tenanted by the bear, the lynx, and the Capercally, their summits offering a home to the chamois and the Ptarmigan, whilst lower down roe-deer, Woodcocks, and our common Grey Partridge (*Perdix cinerea*) in great numbers reward the armed explorers. Whilst on the subject of Partridges, I may here state that, with the one exception mentioned below, I have never met with any Partridges in Spain but the common Red-legged species (*Caccabis rufa*). The Barbary Partridge (*C. petrosa*) I saw only on the Rock of Gibraltar, whither it was introduced from the African coast; I have heard of its former occurrence in Murcia, but am assured that it is no longer to be met with in that province. The Grey Partridge is confined to the north; and I could not hear of the Bartavelle (*Caccabis saxatilis*) in any part of the country,—my experience on this point entirely coinciding with that of Captain Cook-Widdrington ('Sketches in Spain,' p. 279).

To return to my proceedings at Madrid: I went down once or twice more to the Casa de Campo, but without any great result, merely adding some very brilliant Golden Orioles to my collection, and having opportunities of watching the habits of that singular bird the Little Bittern (*Ardeola minuta*), which was breeding on the banks of the small lake in these grounds. Bee-eaters were committing great ravages amongst Manuel's bee-hives; and his *chico*, or servant lad, was busily engaged from daybreak till dark in shouting and firing to keep them away. The heat was now considerable, and had silenced most of the birds; the change in this respect between my present and former rambles in these grounds was very remarkable. In April the call-note of the Scops-Owl, the thrilling music of Cetti's Warblers, and Nightingales, the chuckle of the Red-legged Partridge, the incessant babble of the Great Sedge Warbler in the reeds, and a multitude of other bird-sounds enlivened these groves and glades; but now, with the exception of an occasional faint laugh from the Green Woodpecker, and the flute-like call of an "*Oropendola*" (the Golden Oriole), hardly a sound of bird-life was to be heard. My friend Don Manuel Sanchez, of Calle de Alcala, brought me great numbers of the eggs of the Blue Magpie, with a few other species, and would not hear of any remuneration, as I had made him a present of an English work on ornithology, which he could not read, but the plates of which gave him extreme delight. A Spanish White, Bewick, or Yarrell still *se fait désirer.* There is no work whatever on general Spanish zoology, though a few lists of the birds and insects of some provinces, published in the Proceedings of the Royal Academy of Madrid, induce us to hope for better things; yet I much fear that any general attention to natural history in Spain will long remain a thing of *manaña.*

On June 2nd we left Madrid for San Ildefonso, better known perhaps as La Granja, from the palace which is situated in the village. Taking the northern line of railway as far as Villalba, we thence proceeded by diligence over the Guadarrama, arriving at our destination early in the afternoon. The road over the Sierra is very fine, the southern side being very stern and barren; on crossing the frontier of Old Castile, at the summit of the pass, we entered a magnificent pine-forest, through which we rapidly descended till we emerged on level ground near Valsain, a village about two miles from San Ildefonso, at the foot of the mountains, the lower slopes of which are clothed with dense oak-copse; and below them again the plains of Old Castile stretch away unbroken as far away as the eye can reach in the direction of Valladolid. San Ildefonso is beautifully situated immediately at the foot of the Sierra, surrounded by shady copses, and watered by the rapid Eresma, whilst the snowy peak of La Peñalara, eight thousand feet high, towers in the background, appearing so close in this fine air that one is led to imagine that two or three hours would bring one to it, although the ascent is in fact a good long day's hardish work. The only birds I noticed on the journey were, besides the inevitable Woodchats, Larks, and Bee-eaters, a few Blue Magpies, one or two Greater Spotted Woodpeckers (*Picus major*), and a Goshawk, which dashed across the road close to us. We found no inn open at San Ildefonso, as the Court was still absent; but we obtained comfortable lodgings in a private house, and I at once sent off the *chicos* of the family to seek and bring in all the eggs that they could find, as our hostess informed me that one of her sons was a *demonio* for bird's-nesting and would soon enlist the flower of the youth of San Ildefonso in my behalf. The result this evening was a nest with five eggs of the Blue Magpie, and an egg of the Cinereous Vulture, which last the boys assured me they had found on the ground at a spot much frequented by this species, which breeds in the pine-forest close at hand, and is by far the most common Vulture in the Castiles. This egg is slightly smaller than those of *Gyps fulvus* in my collection, and is of a uniform clouded reddish-pink colour, very much resembling some varieties of the egg of *Aquila chrysaetus.* I have no hesitation in ascribing this egg to *Vultur monachus,* as, although I was unfortunately too late to find the eggs *in situ* myself, the fragments of egg-shells found in and below several nests of this Vulture exactly corresponded with this specimen, and I found that *Gyps fulvus,* of which species a few pairs used in former years to nest in a range of cliffs near the village, is now comparatively scarce in the district, only one individual coming under our notice during our stay at San Ildefonso, which fell to Manuel's gun, and is now in my collection. I received a letter from Manuel from Aranjuez informing me that he had been too late at Villamejor for the nests of *Aquila heliaca,* but had obtained there several eggs of the Booted Eagle with the parent birds, besides many other species. M. Michel and he arrived at San Ildefonso on June 5th. In the meantime the boys had brought me many eggs of different species, amongst them those of the Common Sparrow-Hawk (*Accipiter nisus*), which is abundant here, though I never met with it at Aranjuez, Red-necked Nightjar, Blue Magpie, Spectacled Warbler, Missel Thrush, Blackbird, Common Swift, and Grey and Yellow Wagtails (*Motacilla sulphurea* and *Budytes flava*). We drove to Segovia, six miles off, seeing on our way a good number of White Storks (*Ciconia alba*), Common and Black Kites, Woodchats, and Russet Wheatears (*Saxicola stapazina*), but not a single Bee-eater, Spotted Cuckoo, or Common Magpie, which birds, so abundant about Madrid and Aranjuez, appear to be very scarce on this northern side of the Guadarrama. "*Rabilargo*" also, the Spanish Magpie, was rather conspicuous by his scarcity; and I discovered that all the eggs of this species brought to me by the lads came from an enclosed shrubbery of a few acres in extent, immediately adjoining the village.

As I was still unable to walk, I could of course do but very little in the way of collecting, and was forced to confine myself to the use of my eyes instead of my breech-loader, thus missing on June 5th a chance of obtaining perhaps the rarest bird which I met with during this visit to Spain. We were returning from a drive in the pine-forest, from which we had just emerged on the road near Valsain, when my attention was attracted by our *chico* (who was on the box) exclaiming, "¿Que pajaro es aquel?" and on looking up I saw a beautiful specimen of La Marmora's Falcon (*Hypotriorchis eleonoræ*) passing us slowly at not more than ten yards' distance. This individual was in the plumage which so nearly resembles that of the Hobby and is, I believe, that of the second year. We halted, and I had the pleasure, not unmixed with vexation, of observing for several minutes the evolutions of three of this rare species without being able to secure a specimen. All three were busily engaged in catching insects, over a marshy open spot close to the road, seizing them in their talons, and shifting them into their mouths with great ease and rapidity; they appeared totally regardless of our presence, and all repeatedly passed within a few yards of the carriage. One of these Falcons was of a uniform sooty-brown; the third was apparently in the same stage of plumage as the first we noticed, but not nearly so brightly or distinctly marked. The extreme length of wing in this Falcon immediately arrests the attention of any one accustomed to Hawks. This peculiarity is even more striking in La Marmora's Falcon than in the Common Hobby; and the difference in size between the two species is much more remarkable on the wing than I should have imagined. On informing Manuel of what we had seen, he told me that he had often observed small Hawks near the Escorial engaged in catching insects, but never any of the *H. eleonoræ*. We revisited the spot where we saw these Falcons several evenings in vain; we never saw them again.

I was shown a Crossbill (*Loxia curvirostra*) alive in a cage in the village,—the story about this species here being that Carlos III. kept a great many of these birds in an aviary at Rio Frio, a shooting-lodge at a few miles' distance, of which several pairs escaped and established themselves in the *pinar*, where they are now common. The possessor of the Crossbill accurately described to me a Bullfinch (*Pyrrhula vulgaris*) which I never met with in Spain, but which he assured me was not very uncommon about San Ildefonso during the winter. On June 6th Manuel and Agapo went for a long day up into the forest, and returned with a fine female Goshawk, shot from the nest, which contained three young birds just hatched. He also brought in a good specimen of *Picus major*, which is the Common Woodpecker of this district, and two specimens of *Parus ater*, which species I had not hitherto observed in Spain. They had also met with two nests of *Vultur monachus*, each containing a young bird, and a nest of *Aquila pennata*, which they did not examine, as Manuel could not manage to kill the parent bird. The next day I was able to get about a little on foot; and whilst Manuel and Agapo again went up into the forest, I wandered about near the village and obtained specimens of the Ortolan (*Emberiza hortulana*), which is very abundant on the hill-sides here, where I also met with the Stonechat (*Pratincola rubicola*), which appears to be very locally distributed in Spain, as, although common in many parts of Andalucia, I never met with it in New Castile. I found nests of the Woodchat and Woodlark, but sought in vain for that of the Little Owl (*Athene noctua*), which we were assured existed in a ruined chapel near the village. Manuel came in at night with a very fine specimen of the Cinereous Vulture, which he had winged with a bullet as she left her nest, an egg of the Booted Eagle from the nest which they found yesterday, and a nest with five eggs of our Common Redbreast (*Erythacus rubecula*), which, although common throughout Spain in winter, breeds only in the mountains, as I found was also the case in Northern Italy. The boys brought in two beautiful nests of *Ficedula hypolais*, each containing five eggs, as well as eggs of *Sylvia cinerea* and *Sylvia atricapilla*. The next day, having procured ponies, we all went up into the forest together, and made for the Vulture's nest, from which Manuel had killed the female. This nest was situated at the top of one of the tallest pines, and was visible from some distance, with the male bird seated close to it. He allowed us to approach almost to the foot of the tree, and sailed off apparently unhurt by a volley of our four barrels. Agapo was soon up to the nest, in which was a young bird of about the size of a Dorking-cock, which made strong demonstrations of hostility on finding himself for the first time in close proximity to the human form divine. Agapo, however, soon overcame his scruples, and lowered him tethered by the legs to the ground, where we received him with every attention. A more unsightly specimen of the great class *Aves* I never before beheld: he was covered with brownish-grey down, with a bright pink cere and very pale yellow legs and feet; part of the trachea of a sheep or goat, perfectly hard and dry, completely encircled one leg; and altogether his appearance presented a combination of the absurd and repulsive almost impossible to describe. The nest was composed of large boughs externally, and was lined with twigs and a few fragments of wool. In the foundation of the nest, which was unusually deep for that of a raptor, a pair of Tree-Creepers (*Certhia familiaris*) had established their abode, and were rearing a family of five or six young. This species appears to be common in all the wooded parts of the country. The Nuthatch (*Sitta cæsia*) is also common in this forest, and I shot two good specimens close to the Vulture's nest.

A little further on in the forest we found a large nest, on the lower branch of a pine. Manuel crept cautiously up towards it, and shot a fine female Booted Eagle as she dashed off. He then made a *cache* with pine-boughs within shot of the nest, and in about half an hour another shot proclaimed to us that the male bird also had fallen. The nest contained two eggs; this appears to be the invariable number laid by this Eagle, which is one of the most common of the raptorial family in this district, arriving about the end of April, and remaining in the country till October. One of these eggs is represented on the accompanying plate (Plate X. fig. 1). The other and more highly-coloured specimen, drawn on the same plate (fig. 2), was taken from a nest at Aranjuez on May 7th. The nests, of which we found several, were generally placed on the lowest branches of a tall pine, at their junction with the main trunk, and were built of sticks, but inside invariably contained fresh twigs with the green leaves adhering to them. This Eagle has a shrill, piercing scream, different from that of any other raptorial bird with which I am acquainted.

We shot a Common Kite (*Milvus ictinus*) from the nest, which contained two half-fledged young, and also found a nest of the Common Buzzard, in which was a young bird not long hatched, and a large lizard, both of which were devoured by our young Vulture after a little pressing. I may here mention that I reared and brought home this Vulture, which soon became very tame, and that very evening devoured the greater part of the body of his maternal parent, which M. Michel had skinned in an incredibly short space of time. This young Vulture has now grown into an enormous bird; he is alive and well, and, though not so amiable in temper as he was during his infancy, appears to live amicably with a fine old Golden Eagle in my aviary here, recalling to my mind many *cosas de España*, and making me long to be once more amongst the pines of San Ildefonso, with the untiring Manuel and trusty Agapo.

The commonest birds in this forest are Woodpigeons (*Columba palumbus*), Great Spotted Woodpeckers, Chaffinches, Nuthatches, and Coal-Titmice, besides the various birds of prey before mentioned. I on this day saw a Dipper (*Cinclus aquaticus*) for the first time in Spain; this bird is common on the Eresma and the other mountain-streams of this district. A pair of Redstarts were nesting in the roof of the church of San Ildefonso, which were, I presume, of the race or variety known as the Grey Redstart (*Ruticilla cairii*), as both male and female were in a state of plumage very closely resembling that of the females of *R. tithys*. I could not shoot them, as they always haunted the church in the middle of the village; but I had numerous opportunities of observing them closely, as the window of my room commanded a full and near view of their favourite habitat. The song of the male bird resembles that of the Common Redstart (*R. phœnicura*) more than that of *R. tithys*; and he was very noisy about daybreak and sunset. These were the only birds of this race that I met with, though *R. tithys* was very abundant amongst the rocks at some distance from the village.

We remained at San Ildefonso till June 15th, making a few more expeditions up into the Sierra, where we found several more nests of *Vultur monachus* (each containing a single young bird), some more nests of *Aquila pennata* with eggs, and obtained on one occasion a fine specimen of *Gyps fulvus*, as before mentioned. I was surprised to find the common Hedge-Sparrow (*Accentor modularis*) in great abundance high up on the mountains, haunting and breeding amongst the scrub which crops up amongst the detritus and scattered boulders below the crags, in just the sort of locality I should have expected to find *A. alpinus*, with which species, however, I did not here meet. The Rock-Thrush (*Petrocincla saxatilis*), the Rock-Swallows (*Hirundo rupestris*), and the Wall-Creeper (*Tichodroma muraria*) were common amongst the peaks of the Sierra, and I on several occasions noticed the Alpine Swift (*Cypselus melba*). We often saw a pair of Lämmergeyers (*Gypaetus barbatus*), but never could manage to secure a specimen. A woodcutter met us one day in the forest swinging a young Golden Eagle in one hand, whilst the other grasped an egg from the same nest. He had just taken them, and took us to the spot; the nest was built in the top of a low pine, at not more than twelve or fourteen feet from the ground, in a craggy and thickly-grown part of the forest, at about a mile from the village. Manuel was at the place before daybreak the next morning, and came in a few hours after with the female bird, which he had shot as she came sailing to the nest with a Partridge in her talons. The boys brought in several eggs of *Budytes flava*, and one nest with eggs and bird of *Motacilla sulphurea*, as well as some eggs of *Cyanopica cooki, Scops giu, Ruticilla tithys*, and others of no particular interest.

Here ended my ornithological researches in Spain. I regret that, not having yet visited the country during the winter months, I am unable to give any very precise information, from personal observation, as to the waders and swimming-birds of the Peninsula; but I propose, on some future occasion, to publish in this Magazine a complete list of the species that have come under my notice, either in a wild state or in collections, with their scientific and local Spanish names, and the localities in which I met with them.

Lilford, August 1866.

XXXI.—*Ornithological Notes from Formosa.* By Robert Swinhoe, Her Majesty's Consul at Taiwan, F.Z.S., &c.

(Plate XI.)

[Continued from p. 316.]

I returned from the mountains, having penetrated to about the centre of the island. I was there arranging to climb across to Black Rock Bay, on the east side, when a letter reached me, and caused me to hurry back with all speed to Takow. It brought me instructions to repair by first vessel to Amoy to take charge of the consulate there. I was altogether ten days in the interior; but as I am now hurried I must defer my sketch of the trip for a future paper. I bid a long farewell to Formosa in a few days. I will, however, attempt, before I leave, to finish my descriptions of novelties and the like. I commence with

Myiomela montium, nobis (Ibis, 1864, p. 362), ♀. Wing 3·5 inches. Bill blackish-brown. Legs brown, claws paler. Plumage olivaceous, tinged in parts with buff; throat paler, with roots of feathers whitish. A concealed white spot on side of the neck. Abdomen more or less grey, its middle pure white. Axillaries olive-buff. Under margins of remiges light reddish-buff, making the under part of closed wing reddish on its inner half. Quills edged exteriorly with reddish olive-brown. Rectrices olive-brown; the second to the fifth (the outermost being counted as first) having white on the outer web, the third only a little close to its root, the second more, and the third and fourth for more than half their lengths; the neighbourhood of the white strongly shaded with black, as are all the rectrices near their roots. Outer tail-feathers in one specimen entirely black, showing, I presume, either that the particular specimen is a young male in moult, or

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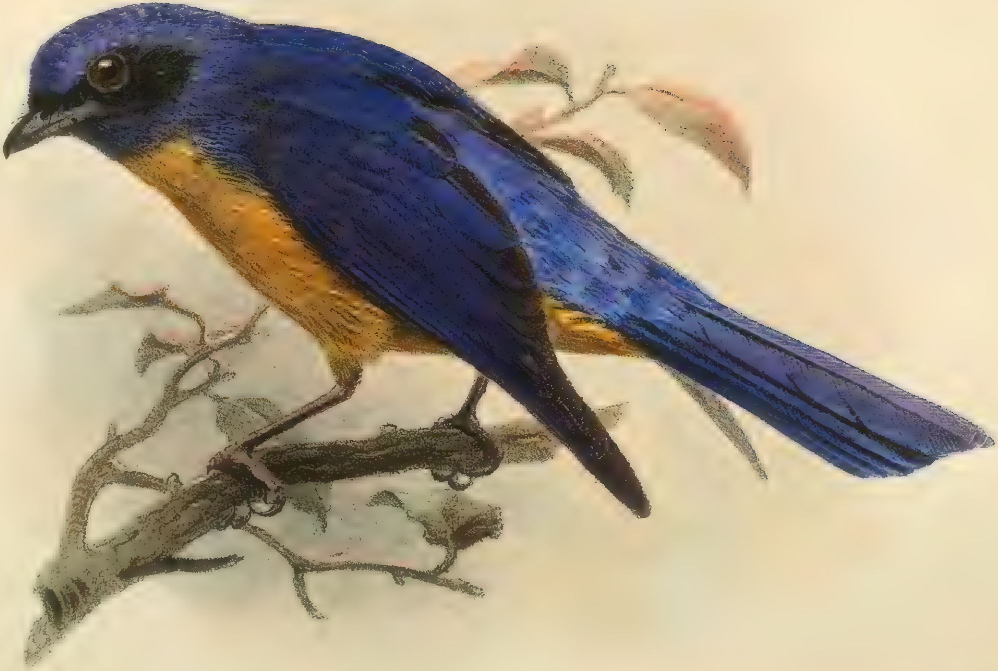

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CYORNIS VIVIDA.

that the mature female at times partially acquires the masculine garb. I think the former, though this specimen is more of the proportions of the females, which are smaller and shorter in the wing than those of adult males.

*Cyornis vivida**, nobis (Ibis, 1864, p. 363), ♀, shot November 1865. This specimen has a decidedly shorter bill than the ordinary run of males. Bill blackish-brown. Legs and claws brown. Head and hind-neck deep ashy-grey, which colour mingles with olive on the back. On the rump the olive stands alone. Quills and tail hair-brown, washed with olive, and margined on the coverts with reddish olive-green, and on the quills with light olive-buff. Tail brown, tinged with red, and broadly margined with reddish, chiefly towards its base. Lores, orbits, and throat buff, mottled with olivaceous. Axillaries and vent yellow-ochre. Quills on the under-wing edged interiorly with whitish. Middle of the belly and flanks with more or less pure white; rest of under parts light olivaceous, washed with light buff, and here and there smeared with ochreous-buff. Wing 3·5 inches long. Size that of the male. This specimen has *one* vivid blue feather on the hind-neck, and one of the scapulars is edged with blue. The tibiæ are brownish-olive.

Another specimen, also apparently a female, has a longer bill and is of similar sober plumage, but has the coronal feathers tinged with blue in the middle and a touch of blue on several feathers of the back and rump.

Graucalus rex-pineti shows no tinge of olive in the adult. Space round the bill, the orbits, and the entire face, throat, and under-neck are black, getting fainter on the breast. The specimens vary much in all their proportions, and by their variation in hue seem to show the bird to be some time in acquiring the full plumage, maturely-clad individuals being rare. Judging from a comparison of specimens, I do not believe that there is any constant difference between the sexes. I saw in England a skin very similar to our adult bird. I forget whence it came; but it was marked *G. macii*. Dr. Jerdon's descriptions are apparently from young individuals.

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* [As on two former occasions, we avail ourselves of the kindness of M. Jules Verreaux to illustrate the present paper by a figure (Plate XI.) of the tpe-specimen of this species, which he has sent us for that purpose.—Ed.]

Dendrocitta sinensis, var. *formosæ*, in the adult state has a white belly and nearly white rump. These appear to be its chief differences in colouring from the *D. sinensis* of India. Mr. Blyth says (Ibis, 1865, p. 45) that the Indian *D. himalayensis* differs from the Chinese bird. Where did he see *D. sinensis* from China? I am not aware that the species has ever been procured from that country *proper*.

On the 25th of January I got from the central mountains my second Formosan specimen of *Herpornis xantholeuca*, Hodgson. This strikes me as being even more typical than the one I procured in the neighbourhood of Tamsuy.

The Chinese Wild Duck that I received from Ningpo some years ago, and which I set down (P. Z. S. 1863, p. 324) as identical with *Anas pœcilorhyncha* of India, by no means answers to Dr. Jerdon's description of that bird. It is of similar style of coloration, but has an ochreous band across the bill like *Anser segetum*. I think a specimen of it is in my collection at present under the charge of Mr. Tristram. I will name it temporarily ANAS ZONORHYNCHA. It is probably the same species that Temminck notes from Japan as intermediate between *A. boschas* and *A. pœcilorhyncha*.

I was up the river the other day with a friend who carried a gun. A *Rallus striatus* appeared on the bank. My friend shot at it, when it ran and shoved its head into a hole. We picked it up, and found that the only injury it had received was a small shot-wound on the tip of the middle toe of one foot. I brought it home, caged it, and fed it on rice and water, on which it seemed to thrive. It is now alive and well in an aviary at Amoy.

Temenuchus sinensis, *Lanius lucionensis*, and *Phyllopneuste sylvicultrix* pass the winter in Formosa.

On the 31st of January I received a bird which I name

SIPHIA INNEXA, sp. nov.

Bill black and *Saxicoline* in side aspect; viewed from above, broad at base and narrowing to tip. Legs pale, with a plumbeous tinge; feet *Muscicapine*, with attenuated tarsus and longish claws. Upper parts, sides of breast, and axillaries dusky cyaneous, blackened on sides of the neck. Lores and space round bill black. A few of the feathers of the frontal portion of the supercilium white on their apical halves, forming a partial eyebrow. Under parts ferruginous-buff, olivaceous on the flanks, and white on the middle of the belly and on vent. All the under feathers with their basal or concealed halves dusky plumbeous. Tibiæ dusky. Quills deep hair-brown, edged with light reddish-brown and olivaceous; winglet deep blackish-brown; coverts the same, edged with dusky cyaneous, and occasionally with reddish-olive; tertials margined beneath with pale ferruginous. Tail blackish, margined with dusky cyaneous; all the rectrices, except the middle pair, having more or less pure white on their basal third, which is concealed by the upper tail-coverts, and only apparent when the tail is expanded. Tail 1·5 inch long, of twelve nearly equal mucronate feathers. Wing 2·3 inches long; the fifth quill slightly longer than the fourth, and longest; first quill small and narrow, ·75 inch shorter than the second, which is ·3 inch shorter than the third, the latter being ·1 inch shorter than the fourth. Whole length of bird 3·8 inches. Tarsus ·7 inch. Outer toe longer than the inner. The stems of the soft cyaneous upper feathers are whitish on their basal or concealed half. Axillaries mottled with a little of the ferruginous breast-colour. This species resembles most *S. superciliaris*, Blyth, but is to be distinguished from it by its black face and sides of the neck, and by the white base to most of its rectrices. It has also characters in common with the other three species, *S. strophiata*, Hodgs., *S. leucomelanura*, Hodgs., and *S. erythaca*, Blyth.

On the 8th of February I received a fine specimen of a female *Astur* (*Lophospiza*) *trivirgatus*. Length 16·25 inches; wing 9 inches; tail 7·6 inches. First quill 1·5 inch shorter than the second, which is more than ·8 inch shorter than the third, which is ·3 inch shorter than the fourth and fifth, the longest in the wing. The second to the fifth quills indented on the inner web, the first less sinuated. Tail of twelve nearly equal feathers; rectrices barred, the outer pair with only one faint bar near the base and an indistinct one near the tip. Legs yellow, claws black. Tarsi about 2·75 inches long, feathered for about 1·75 inch down the front; middle toe without the claw about 1·62 inch; claw of outer toe about the same size as that of the middle toe; inner toe shorter than the outer, with the claw nearly as large as that on hind toe. Eyelids black. Bill bluish-black, pale at base of the lower mandible and tinged with orange. Cere olive-green. (These parts, however, are not very fresh, and may have changed colour.) Occiput with a few lengthened acuminate feathers.

February 15.—A live *Palumbus pulchricollis,* Hodgs., that I had in a cage died this morning without giving me the opportunity of hearing its note. Base of bill and tumid cere pinkish-purple; apical half of bill pale yellow, with a slight tinge of lead-colour. Bare skin about the eye leaden-blue; eyelids black. Irides pearly, with a faint tint of yellow.

On the 1st of March was brought to me from the interior a Grass-Owl, which strikes me as new. It appears to have its nearest ally in *Strix candida,* Tickell, of India. It is called by the natives the "Monkey-face," and I will hence introduce it as

STRIX PITHECOPS, sp. nov.

Length 15 inches. Wing 13·2 inches. The second quill slightly shorter than the first, which is the longest in the wing. Tail 4·8 inches long, of twelve soft feathers. Tarsus nearly 3·6 inches long; middle toe and claw 2·5 inches. Bill yellowish horn-colour. Toes brownish flesh-colour, with greyish-brown claws. This bird answers in most respects to Dr. Jerdon's description of *S. candida*; but in ours the ruff is white; the tarsus is feathered for nearly half its length, being bare on the hind part of the tibial joint, and partly so along its posterior edge. A few short tufts of feathers were scattered down the tarsi to within an inch of the toes; and among these pale stiff procumbent bristles occur which extend along the upper surface of each toe. Dr. Jerdon's bird (B. Ind. i. p. 118) is "scarcely plumed at the knee." I take this to mean that the feathers scarcely extend beyond the joint where the tibia meets the tarsus. Our bird further differs in having a broad yellowish-buff collar round the neck, which is imperfect and disconnected at the back. It also has a band of bark-brown feathers varied with buff running across the breast. These two last are also not mentioned by Dr. Jerdon as characteristics of the allied Indian form. I should say that I have no specimen of *S. candida* wherewith to make a comparison.

I received at the same time a specimen of *Salicaria cantans* of the 'Fauna Japonica.' At least it answers well to the description of that species, and recalls to my mind a bird bearing that name that I saw in the Leyden Museum. Length 5·5 inches; wing 2·8 inches; tail 2·4 inches. Fourth and fifth quills the longest in wing; first quill ·7 inch long; second ·4 inch shorter than third, which is ·2 inch shorter than the longest. Tail only moderately graduated. Bill blackish-brown, ochreous on the tomia, and orange at the gape; the base of the gonys somewhat pale. Legs deep brown, blacker on the toes and claws. The bird in stature is intermediate between *Calamoherpe canturians* and *Calliope*, but it has much the plumage of *Sylvia hortensis*. Its feet are heavy, and its claws thick and blunt; but the hind toe is not so disproportionately large as in *C. canturians* and *C. minuta*, its tail is much less, and its primary remiges are differently graduated. At a hasty glance one might mistake it for the immature *Calliope kamtschatkensis*; but there is no chance of confounding it with *Calamoherpe canturians*.

Adieu! "Cras ingens iterabimus æquor." Amoy-ward ho !

Takow, S.W. Formosa,
8 March, 1866.

On the 8th of March I received from the interior a male of my new *Strix pithecops*. The bird was being brought down alive, but died before it reached me. This specimen, examined before it was skinned, wanted the collar and pectoral band which I noted as specific characters in the specimen before described. I took down the following note of the bird:—Length 14·2 inches; wing 11 inches. Tail of eight feathers, bowed on its surface or hogged, 4 inches long. Angles where the two facial disks meet on the crown lined with deep blackish-brown. Bill pale flesh-coloured, nearly milky-white. Bare portion of tarsi and toes the colour of a labourer's rough scaly hand. Claws pale, with a tinge of brown, their culmens brown.

On the 8th of May a box of birds reached me from Formosa, the captures of my hunters in the interior after my departure for Amoy. One of the birds seems to be my *Tribura squameiceps*

(P. Z. S. 1863, p. 292); but unfortunately in this specimen the longest and most important feathers of the tail are missing. That procured by Captain Blakiston at Canton, from which the species was originally noted, had no tail at all! I can now say that the bird has a graduated tail. The most remarkable bird of the lot was a species which, in coloration and some other peculiarities, recalls the *Drymœcæ*, but has a short tail. It seems to me most nearly related to the genus *Horeites*; and to that I will for the present refer it:—

HOREITES ROBUSTIPES, sp. nov.

Length 4 inches. Wing 1·9 inch; first quill short, fifth and sixth equal and longest. Tail 1·4 inch, of ten feathers, graduated and short. Tarsus, hind toe, and claws large, long, and strong, yellowish, washed with brown. Upper and apical third of lower mandible blackish-brown, yellowish on the edge. I have only two specimens. The bill of one is longer and more curved than that of the other. Upper parts of plumage olive-brown, tinged with reddish on the back and wings. Quills and wings generally hair-brown, except on their margins. Tail light hair-brown, edged with reddish-olive. Rump at base of tail yellowish-olive. Streak over the eye and underparts, including axillaries and edge of carpus, cream-colour, ochreous on the belly, and olivaceous-buff on breast, flanks, vent, and tibiæ.

In my trip to the mountains, having put up at a village, at an early hour I strolled up the hill to a clump of fine trees. On the bare branches of a large *Bombax malabaricum* I noticed a *Psaropholus ardens*; its bright crimson plumage made a lovely contrast with the dull red flowers of the tree, and the light green bursting leaves. I rushed back to our hut for a gun and shot him. He showed still the whitish underparts and streaks of immaturity. But the great question was solved. I had accepted hearsay evidence that its iris was *red*. I now found for myself that it was *white*, like that of its congener *P. trailli*. The white was encircled near the eyelids with a black rim. The eyelids were lead-colour. Bill bright French-blue. Tongue yellowish, with a broad black bifid tip. Stomach full of small figs, either of the banyan or some allied species. When picked up, the wounded bird screeched just as yellow Orioles do.

In penetrating into the mountain-forests we had no road to follow except what nature afforded in the nearly dry beds of torrents. We ascended one of these with high magnificent wood on either side. The contracted stream eddied and gurgled in rapid course over the rounded shingle, now and then expanding into small shallow tranquil pools, abounding in little spotted, striped Trout-like fish, or leaped with a roar and scattering of spray from some abruptly precipitous rock in the form of a cascade. The coolness of the shade by the side of the stream was delicious after our toilsome walk in the hot sun; and the glimpses of the distance we caught occasionally through gaps in the jungle were truly enchanting. Butterflies, that are scarcely ever seen at this season (February), at Takow by the sea, were sporting in numbers about the boulder-masses in the stream, and birds innumerable were whistling in the trees. Verily this was the paradise of nature in Formosa. The sweet little crimson *Pericrocotus griseogularis*, with its crocus-tinted mate, was busy among the tall branches; and on the tops of the tall trees the *Chaptia brauniana* sat perched, Drongo-like, uttering loud musical notes, and chasing each other with screams and undulating flight from tree to tree. Its ordinary notes may be syllabled "heeah muncha muncha." This is quite a bird of the high mountain-forests. I did not once see it in the plains, where *Dicrurus macrocercus* takes its place. The Chinese of the interior call the *Chaptia* the "Swa-na aw-tsew," or Drongo of the mountains. The lead-coloured Redstart *Ruticilla fuliginosa* with its unique speckled mate was occasionally seen sitting, either sex on a different rock in the stream, or whistling and chasing one another along its course. They shake the tail like the typical Redstarts, though Dr. Jerdon says they do not (Birds of India, vol. ii. p. 143), but have also a frequent habit of expanding it.

On a tree on the side of a hill on the opposite side of the stream I saw a Buzzard-like bird sitting. I walked up to what I considered within range and fired a cartridge at it. It rose, and to my astonishment I saw it was a *Spilornis hoya*, mihi [*anteà*, p. 304]. It took a circle and then flew over my head. I fired my loose charge, but without effect. The transparency of the mountain air had led me to mistake the distance; and what at the range I fired appeared to me a small Buzzard, was a no smaller bird than the Spotted Eagle.

February 21.—In some bamboos close to the mountain-village where we had passed the night, a *Sibia auricularis* was singing the same run of notes over and over again repeated with little variation. They were sweet and agreeable, but in style so like those of *Copsychus saularis,* that before I saw the bird I knew what the songster was.

One small species in a grove bothered me exceedingly. The little fellows were all over the trees, each one chattering and twittering, and moving about in a most desultory manner. I got at last a fixed glance at one of them, and observed that it had a white ring round the eye. I thought I had discovered a new species of *Zosterops.* I stood entranced, watching their antics. A small Woodpecker was crying near me. I turned from him. I did not heed a pair of *Hypsipetes* that were sitting and calling to one another on the top of the tree over head. At last with trembling hand I fired. Down fell the bird. I rushed to pick it up, and was just in time to snatch the booty from a *monstrum horrendum* in the form of a large *Tropidonotus* that was in the act of seizing it. But my bird was only the *Alcippe morrisonia.* My silent solitary acquaintance of a few days previously, when I had occasionally observed it clinging to the sides of trees like a Nuthatch, was here in moderately large parties, and as noisy as any other noisy little species. Subsequently I heard the bird on many occasions uttering its loud harsh notes. It is in habits like a diminutive *Garrulax.*

Dicrurus, Budytes, Motacilla, and other birds of the plains were common enough on this cleared delta, between the two mountain-streams. The low woods were without leaves, and it was very hot. I tried to persuade my guides to descend and cross the stream to the mountain-jungle, but they said that they were leading me to the Green Doves. True enough, on the side of a rise they pointed out several Green Doves perched on the trees. We clambered up the hill, and on a high tree in the ravine on the other side sat a Green Dove. One of the hunters fired at it, but it only flew to another tree. I fired, and a shower of feathers was scattered from its rump. It flew still further. A hunter crossed the ravine, and from the concealment of the bushes had two more shots at it. The bird nevertheless escaped. We crossed the ravine, and walking past a banyan perceived a commotion among its branches. Out came several Green Doves. I knocked one over. It was a fine male *Treron formosæ*. A little further on I bagged a female of the same species. The iris of the dying bird had alternate rings of bright purple and black, with an outer ring of blood-red. I descended into a ravine under some lofty leafy trees. Some green birds were hopping heavily about the top branches, very slow in their movements, tame, and not scared at the noise of a gun. I shot one, and picked up a *Megalæma nuchalis*. Its iris was chestnut; the feet pale grass-green. *Dendrocittæ* were passing from tree to tree with very undulating flight, and *Hypsipetes* was chasing *Zosterops*. The Sparrows about the mountain villages were the ordinary *Passer montanus*.

In the afternoon we visited a delightful glen, with fine wood all round it. Here *Sibia auricularis* was the commonest bird, flying in parties one after the other along the high branches of the trees. Its call-note was very like the sibilant note of a Wren (*Troglodgtes europæus*), and its habits very like that of a Tree-*Garrulax*. One would occasionally whistle to another. One of my hunters put up an *Oreoperdix*, and found that it had deposited an egg, which was white, and quite similar to the one I had procured before. *Bambusicolæ* were crying all around us. The Green Dove, too, we heard, and I then learned what the Chinese meant by comparing its note to the shouting of women to their pigs. It sounded like a man with a bad ear and a loud voice attempting to coo like a dove. The noise was quite startling. I procured a mature *Turtur rupicolus* (Pall.). Several Crows (*Corvus colonorum*) were flying about, and *Garrulax taivanus* and *Pomatorhinus musicus* both abundant. In the mud of the watercourse I detected the footprints of some large Wader. The hunters said that they were made by the feet of Cormorants; but there were no indications of the interdigital web. They must have been those of the Black Stork (*Ciconia nigra*). A pair of dark Heron-like birds with red bills and legs were seen by a friend on a former visit to the interior. From his description of them I concluded that they must have been the Black Stork or some cognate species of *Ciconia*. They were not known to the residents of the interior; and I thence infer that they were only straggling winter wanderers.

By the side of a mountain-stream I saw a *Butorides javanica*; and a Cormorant, I think the ordinary species, came flying down on rapid wing. The guides shouted "There is the Stork you so much want." This was on the 22nd. We were marching over the rough path by the side of a torrent, and were, on our guard against treacherous attacks from any skulking savage, all armed with guns, matchlocks, or spears. We took a long rest under the shade of a tree hard by a wood. Green Doves appeared. One of the hunters dropped away and bagged a male. It was the white-bellied species, *Sphenocercus sororius* [*anteà,* p. 311]. In mature specimens the male has a fine glow of buff on the breast and forehead. By the banks of the stream occasional raised patches of stones covered with coarse grass occurred. In these lay hid Goatsuckers (*Caprimulgus stictomus*), which fluttered up before us to drop again into the grass a few paces further on. As they steal along on silent wing at night they utter occasionally a subdued croak.

On the 24th of February I spied a *Graucalus rex-pineti* sitting on a high tree over my head. His notes sounded like "queer-queer" uttered nasally. I also observed a pair of *Parus insperatus,* in manners a good deal like the Great and Coal Titmice.

About twenty miles from Takow, on the plains, I saw a *Corvus colonorum.* This is the first instance that has come under my notice of this bird occurring away from the mountain-range.

I have just picked out a few jottings from my journal on the birds seen in the interior. I have not now time to spin a yarn on my travels. This I must reserve to some future date. I left Takow on the 11th of March and on the 13th reached Amoy, where I am now a fixture for some time to come.

Through the kind assistance of Mr. Thomas Watters, who is Acting-Consul in my place at Taiwan, I am able to keep my hunters in Formosa still at work; and it is through his good offices that I have been able to procure the species that I have acquired since leaving Formosa. With the birds noted in the commencement of this paper I received from Formosa a *Micronisus,* which answers well to Dr. Jerdon's description of the male *M. virgatus*; but as I do not know the species, I cannot say with confidence that it is that bird. It was shot about the end of March 1866.

On the 11th of May Captain Ebert, of the British schooner 'Pearl,' brought me an adult *Micronisus soloensis,* which flew on board his vessel a few days before at the Pescadores. Its cere and legs are bright orange; its claws are black. It has the spotless cream-white axillaries. Its tarsi and toes are short and thick, as compared with those of the supposed *M. virgatus.* From its occurring at the Pescadores we are justified in adding it to the Formosan list.

Two adult specimens of *Gorsachius goisagi* were also received: one is marked with more vivid chestnut than the other. They correspond with Bonaparte's description of the species in his 'Conspectus.' The crest of the adult in summer dress is long, and composed of several rather broad feathers, and similar in style to that of *Butorides javanica.* In winter the crest seems to fall, leaving the head smooth and plain chestnut, instead of being capped and crested with cinereous-black plumes. This seasonal change is the chief cause for the confusion in determining the species. The young bird described in the 'Conspectus' would appear to be this species in winter dress. The true fledged nestling I have already described [*suprà,* p. 123] from a pair that I kept alive at Takow. It is a species of the jungly interior, and occurs rarely on the plains.

I think I must have been wrong in referring the *Turnix rostrata* (Ibis, 1865, p. 543) to the *T. dussumieri* division of Jerdon and Blyth. I have lately received two or three more males, similar to the first; one I got with the chicks. I have also some from the same locality, which I take to be females. They have a much deeper bill, which varies in length, depth, and even somewhat in form in individuals. Their forehead, cheeks, and throat are black, speckled with white, and they are larger than the male in all their proportions. They have, too, stronger legs; and the spots on the breast of the male are in the female converted into numerous black zigzag transverse bands. Both sexes differ in proportions *inter se*, and also in markings; but all lately procured have the black and the patches of reddish on the upper parts more pronounced than in the male I took as my type for establishing the species. This last was shot much later in the season. Specimens of *T. taigoor*, Sykes, that I received from Dr. Squire are also very variable. If I am right in considering the black-throated bird the female of the *T. rostrata* (and I now feel almost convinced that I am), the species will belong to the *T. ocellata* division. At Tamsuy (North-western Formosa) I saw a pair of a *Turnix* that were shot, in which the sexes did not differ. They looked to me at the time very like *T. maculosa*, Temm., of China; but, as they were high, I unfortunately could not preserve them.

A *Bambusicola sonorivox* procured in March at Takow is very pale in colour. The chestnut and grey on its plumage remain, the former in all its normal strength; but the black colouring-matter is wanting, even in the bill, probably owing to some constitutional weakness in this individual bird.

The Formosan Ring-necked Pheasant differs from the typical *Phasianus torquatus* of China, not only in the albescence of its lateral feathers, but also in its shorter tail and smaller size. I have a few alive in my aviary here at Amoy, but the variety is scarcely distinct enough to warrant my sending the birds home: I am waiting for Pheasants from this neighbourhood to enable me to institute a full comparison. The Hankow Pheasant has a long and closely barred tail; and I suspect on thorough investigation several good races of the *P. torquatus* will be found to exist in the large tract of country that constitutes the Chinese empire.

I have been so unsuccessful in getting live examples of *Euplocamus swinhoii* home, that I have had an aviary built here, and stocked it chiefly with birds of this species. I intend to keep them for some time to get them into thorough condition, and then try further shipments. Those I have, though several months in confinement, are still shy birds, and skulk in holes the greater part of the day. They frequently utter a plaintive note "co-co-co-*coo*," the last a low wail, almost impossible to syllable. One fine skin of a hen I have got has a snow-white patch on the crown and a few white feathers on the side of the jaws. In other respects it is normal. The second-year plumage of the young cock is very peculiar. The bare cheek-skin is well developed into comb and wattles, but the spurs are not full-grown. The tail, in shape and size, is a good deal similar to that of the hen bird. The underparts are dull black, with very little of the purplish gloss. The quills are deep hair-brown; and the tail is black, with very slight chestnut mottling. The wing-coverts, the lower part of the back and rump, and the ample margin of the secondaries are transversely barred with narrow alternate wavy lines of deep chestnut-brown and black. A few of the scapulars and lesser wing-coverts have their middle buff. The head and neck are purplish-black, and the crown white. The upper back is purplish-black, many of the feathers being broadly centred with white, and having broad maroon-chestnut margins. *The back-mantle is deep chestnut.* At a younger stage the crown also is black. The crown seems to be the first part to develope the white feathers of maturity. The other *Euplocami* may be found to have corresponding intermediate forms of the male.

The single egg of *Euplocamus swinhoii* that I possess is well ovate, being somewhat pointed at one end, 2·4 inches long by 1·7 inch at greatest breadth. It is of a buff-cream colour, very minutely dotted with white.

I have lately received a second specimen of *Hydrophasianus chirurgus* from Takow. This has the axillaries a pure unmottled white, and seems to be every whit the same as specimens from the Himalaya.

A friend who visited the interior of Formosa from Takow reports having flushed from thick covert on a mountain-side a pair of Partridge-like birds, a good deal larger than either of the two species already known. I could learn nothing about it from the natives. Another friend declares that one of his party shot a Partridge at Kelung (North Formosa) the size of *Bambusicola*, but of different plumage. This last will probably have been the immature *Bambusicola sonorivox*.

Amoy, 17 June, 1866.

⁂ The following is an extract from a letter, dated "4th May, 1866," from Mr. Swinhoe, which unfortunately did not reach us until after the publication of our last Number. "If you have not yet printed my paper on recent novelities from Formosa, I must ask you to correct an error for me. I have now a goodly series of Green Pigeons, and find them to be as variable in colour, form, and size of bill, and other proportions, as Mr. Darwin could desire. I think I was wrong in making *three* species. The skins of the first *Sphenocercus sororius* that I received were so badly stuffed that I could not then reconcile them with what I considered the third form, my *Treron chœroboatis* [*anteà*, p. 313]. Now, however, after examining a large series, I consider the two last to be identical, and I should be obliged by your uniting them under the first name, *Sphenocercus sororius*. *Treron formosæ* is a good species; but, with the exception of some slight differences in the tail, I think there is scarcely enough to justify the two forms being referred to distinct genera, though I believe I am right in referring *sororius* to *Sphenocercus*, and *formosæ* to *Treron*."—Ed.

XXXII.—*Note on the Distribution of the Species of* Chasmorhynchus. By P. L. Sclater, M.A., Ph.D., F.R.S.

In Mr. Salvin's excellent article upon the wonderful Bell-bird of Costa Rica (*Chasmorhynchus tricarunculatus*) and its allies, published in last year's 'Ibis' (1865, p. 90), he follows M. Temminck and myself* in giving "Brazil" as the locality of *C. variegatus*. I have lately discovered that this locality, vague as it is, is most probably altogether incorrect. During my visit to Copenhagen last year, Professor Reinhardt was kind enough to show me an example of this species in the Royal Museum, obtained by a correspondent of that Institution, M. Schibby, near Valencia, in Venezuela. In the 'Museum Heineanum' (vol. ii. p. 108) Messrs. Cabanis and Heine give Puerto Cabello, on the coast of the same republic, as the locality of the specimens of this bird in Herr Heine's collection. That this is the correct *patria* of *C. variegatus* is again confirmed by the recent receipt of examples of this bird by my friend Mr. E. C. Taylor, from Trinidad, which, as is well known, has a purely Venezuelan fauna. In his interesting article upon the birds of Trinidad, in the 'Ibis' for 1864, Mr. Taylor has recorded (p. 88) the occurrence of the Bell-bird of Cayenne (*C. albus*) in Trinidad. It turns out, however, that he was mistaken as to the exact species of this group which inhabits the forests of that island, not having at that time obtained skins of the bird, and only having identified it by its reputation and Creole name. Two examples of the Trinidadian Bell-bird, recently forwarded from that island to Mr. Taylor by Mr. n/ Deve~~r~~ish, Superintendent of Roads, having been obtained in the woods of the Bande de l'Est, most undoubtedly belong to *C. variegatus*. We see, therefore, that each of the four known species of this extraordinary form occupies a different area in the Neotropical Region. These areas seem to correspond nearly to those of the four species of Jacamar allied to *Galbula viridis*, to which I have formerly called attention*:—

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* Cat. Am. Birds, p. 258.

1. Central American Isthmus....	*C. tricarunculatus.*	*G. melanogenia.*
2. Coast of Venezuela and Trinidad	*C. variegatus.*	*G. ruficauda.*
3. Guiana....................	*C. albus.*	*G. viridis.*
4. Coast-region of South-east Brazil	*C. nudicollis.*	*G. rufoviridis.*

I may take this opportunity of mentioning that we have now a very fine male of the Brazilian *Chasmorhynchus nudicollis* living in the Zoological Society's Gardens—so far as I know, the first of this species ever introduced alive into England. This bird is now in full song. His notes, one of which, as is well known, closely resembles the sound produced by striking a piece of steel on a small anvil, are of the most extraordinary character, and such as one would scarcely believe any bird capable of producing. The noisy group of Parrots around him seem to be completely overwhelmed by the volume of sound.

11 Hanover Square,
July 14th, 1866.

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* Jardine's Contrib. 1852, p. 93.

XXXIII.—*Notices of Recent Ornithological Publications.*

1. English.

The long expected work of our great descriptive Anatomist on the Vertebrates has made its appearance*; and in it the class *Aves* (if, *pace* Professor Huxley and Mr. Parker, we may still be allowed to speak of birds as a "Class") comes in for a fair share of attention, occupying as it does nearly half the volume. Owing probably to their comparatively speaking uniform type of structure and mode of development, birds hitherto have certainly been neglected by the greatest anatomists, and we rejoice to think that at length the English reader is put in possession of a general treatise on the subject; for since Professor Owen, some thirty years ago, wrote the article "*Aves*" in Dr. Todd's well-known 'Cyclopædia of Anatomy,' we can call to mind nothing really worth the name. The high standing of the author of the present work renders it unnecessary for us to say anything to recommend its descriptive part, and we feel it would be out of place here to discuss any of the theories to which reference is more or less fully made by him. If, however, it be permitted to us, we venture, with all respect to Professor Owen, to complain that his opinions on the systematic arrangement of birds from an anatomical point of view are not expressed with the degree of clearness we had expected; for on this subject we had always looked forward to his labours throwing great light. Near the beginning of the volume (pp. 9–12) we find, it is true, an enumeration of "the orders, with their characters and sample families, adopted as most convenient for the purpose of the present work." These are seven in number, viz. *Natatores, Grallatores, Rasores, Cantores, Volitores, Scansores,* and *Raptores*; and we are further told that "An eighth group of birds has been characterised under the name Cursores * * *. This is not, however, a natural order; some of its exponents have demonstrably closer affinities to other groups of which they are wingless members, just as the Penguins and Auks bear relation to families of the Natatorial order. Thus the *Notornis* is a modified Coot. The Ostrich bears the same relation to the Bustards. The extinct *Didus* and *Pezophaps* are most nearly allied to the Columbaceous group of *Rasores*. *Apteryx* and the allied extinct *Dinornis* and *Palapteryx* bear affinity to the Megapodial family of the *Gallinæ*." But notwithstanding this, the forms just mentioned are not included among the "sample families" previously spoken of, and the words "*Cursores*" and "Cursorial" recur again and again throughout the whole book, without any further explanation of their use than that given (at page 13)—"In all the Cursorial genera the sternum is devoid of keel." If we may conclude from this that Prof. Owen's views on the systematic arrangement of birds are still unsettled, the fact will no doubt be consolatory to a good many ornithologists who have been hitherto blaming their own stupidity only for being in a similar state of mind; but then, surely, it will also be an additional inducement for them to persevere in their endeavours to get their ideas on the subject crystallized into a somewhat tangible form.

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* On the Anatomy of Vertebrates. Vol. ii. Birds and Mammals. By Richard Owen, F.R.S., Superintendent of the Natural History Departments of the British Museum, Foreign Associate of the Institute of France &c. London: 1866. 8vo.

The Seventeenth part of Mr. Gould's 'Birds of Asia,' published in April 1865, contains the following species:—

Harpactes hodgsoni. Himalaya.
—— diardi. Malacca, &c.
—— orescius. Java.
—— reinwardti. Java.
—— mackloti. Sumatra.
Catreus wallichi. Himalaya.
Dromolæa picata. Scinde, &c.
—— opistholeuca. India.
Saxicola capistrata (s. n.).
—— leucomela. Altai, Dauria[*].
—— montana (s. n.). Affghanistan.
—— atrogularis. Scinde, &c.
Pluvianus ægyptius. Palestine.
Budytes citreoloides. India.
Pipastes agilis. India.
Phyllopneuste tristis. India.

Dromolæa opistholeuca is said to be distinct from *D. leucuroides* and *D. leucura*. *Saxicola capistrata* is *S. leucomela* of Jerdon, but not of Pallas; *S. atrogularis* is *S. deserti* of Jerdon, but not of Rüppell. Touching *Pluvianus ægyptius* we may remark, since

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[*] We take this opportunity of correcting a signal mistake we have unfortunately made in the 'Record of Zoological Literature' just published (p. 73), where we said that this species "does not appear to be really Asiatic." Pallas gives the localities for it as above, and says it is "frequentissima avis."

Mr. Gould has not referred to the notice, that some years since Mr. J. H. Gurney recorded (Zoologist, p. 4096) the capture of this bird in Sweden. *Budytes citreoloides* is *B. citreola* of Gould (*olim*) and Jerdon, but not of Pallas. *Phyllopneuste tristis* is distinct from *P. brevirostris*, Strickland.

A reprint of the celebrated Treaty of Vienna concluded in 1815, however carefully annotated, would scarcely be of any assistance to a student of the existing political state of Europe, and those who consult Mr. Newman's reprint of Montagu's 'Ornithological Dictionary'* will, we fear, find it but a blind guide to the present state of the science to which it refers. Montagu's 'Dictionary' appeared in 1802; the 'Supplement' to it in 1813. The exact date of publication of the 'Appendix' we do not know; but, as its author died June 20th, 1815, it does not much matter for our purpose. Setting aside the consideration whether the whole work as an ornithological classic deserved reprinting again (a new edition of it having been published by Rennie in 1833), what we have to do with is the question whether the additions made to it by Mr. Newman give an adequate summary of the progress in this particular branch of knowledge during the last half century. We regret that our answer must be a very decided negative. Perhaps, however, this may not have been the editor's scope. To judge by his preface, his chief object has been to add notices of the different species which have been recorded in certain channels of information as having occurred in the British Islands since Montagu's time. Now this would not seem a very hard task; but we can assure our readers that it is very imperfectly performed. For nearly twenty-four years Mr. Newman has been editor of a magazine which is crowded with records respecting British Birds, in great part of very high value. Surely, when he set himself about his self-imposed labour, he might have been expected to exhaust what information he could extract from his own deservedly esteemed 'Zoologist'? Yet, without more than a moment's reflection, two cases instantly arise to our recollection in which he has not done so. Where in the new 'Dictionary' do we find mention of *Larus ichthyaetus* or *Porzana carolina*. The occurrence of both these species in England rests on unimpeached authority, and the occurrence of each has been duly recorded in the 'Zoologist' (pp. 6860 & 9540). We venture to express our strong belief that there are other omissions of the kind. Nor are these the only cases of Mr. Newman's disregard of statements made in his own magazine. Of *Picus martius* we read (Dict. p. 386) that "There is no British-killed specimen of this handsome bird;" yet in the 'Zoologist' (p. 1298) Mr. J. C. Garth records one, and says in whose possession it then was, while only last year Mr. E. H. Rodd (p. 9847) mentions a second, and gives similar details. But as to the general value of Mr. Newman's additions our readers can judge as well as ourselves from a few samples. We learn from this reprint (p. 46) that "all that we know of" the propagation of the Great Spotted Cuckoo* "is given in the 'Zoologist' for 1853, at p. 3987." Nothing more, then, is to be learnt from the numerous accounts which 'The Ibis' alone, to say nothing of other works, has since contained on the subject! The Spotted Eagle we are told (Dict. p. 83) "will henceforward take its rank as a *native* by the side of our other two British species" of Eagles; but then in exchange we must give up the Ptarmigan, which we now, for the first time, learn (Dict. p. 140) is but "found occasionally in Scotland." Whether, also, it was advisable to reprint, without any warning to the unwary, Montagu's assertions (made of course by him in perfect good faith) that both our Godwits, our Golden-eye, Goosander, Bernacle, and White-fronted Geese, Little Grebe, Greenshank, Pine Grosbeak, and Black-headed Gull (we have only run through the letter G) are all found in the New World, is another point which our readers can determine; for they know that American examples of all the birds so termed by the earlier naturalists are now regarded by the best authorities as distinct from our own representative species with which they had been confounded. In conclusion let us say that we entirely agree with Mr. Newman in regarding a great number of the species he includes "as not having the slightest claim to the title of British birds," and have much pleasure in backing his opinion that "the time seems to have arrived when the conscientious compiler must eliminate all these interlopers."

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* A Dictionary of British Birds. Reprinted from Montagu's Ornithological Dictionary, and incorporating the additional species described by Selby; Yarrell, in all three editions; and in Natural-History Journals. Compiled and edited by EDWARD NEWMAN, F.L.S., F.Z.S., &c. London: 1866. 8vo, pp. 400.

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* In the same page we are told that a bird of this species was observed by "Mr. James Teary" in Pembrokeshire, and are referred to page 3046 of the 'Zoologist' for a record of it. Had Mr. Newman looked at the passage mentioned he would have seen that the bird in question was a Yellow-billed American Cuckoo, and that the observer was Mr. James Tracey, a very well known practical naturalist.

We have received the 'Proceedings' of the Asiatic Society of Bengal for 1865, separately from the 'Journal' of that Society, which again is now published in two distinct parts—one of them being devoted to Literary, Philological, Historical, and Numismatic subjects, the other to Natural History and Physical Science. Some donations of bird-skins are mentioned; but the only description is from the pen of Lieut.-Col. Robt. C. Tytler, who brings to notice what he considers to be a new species of *Spizaetus* from the Andaman Islands, which he terms *S. andamanensis*. It is subcrested like *S. limnactus*, "but is in every respect a much smaller bird. Length from 23 to 24 inches; wing 12 in.; tail 9 in.; tarsus 3½ in." "I found a great many of this species," remarks Col. Tytler, "on the branches of mangrove trees in swampy ground; and, judging from the few observations I could make of them in such unfavourable ground, I should say that their food consists of fish and other sea-animals, for I found portions of undigested fish, crabs, &c. in the birds which I shot. They were by no means timid; on the contrary, they allowed themselves to be approached within twenty or thirty yards without showing the least alarm" (p. 112). Skins of *Carpodacus rhodochrous* were presented by Dr. F. Stoliczka, "from Losus in Spiti, at the height of 14,000 ft. above the level of the sea; and of a new species of *Procarduelis* from the Parang Pass at a height of 18,500 ft. above the level of the sea" (p. 39). Mr. Simpson presented the skin of a Peacock, "supposed to be a new local variety" (p. 11). Nothing more is said of it, or of whence it came; but Dr. Sclater's supposed new species, *Pavo nigripennis*, recurs to mind; and the latter is most decidedly not, as he formerly suggested, the wild Peafowl of the island of Ceylon.

2. FRENCH.

Some months ago we suggested (Ibis, 1865, p. 223) that a great ornithological *coup* was incubating in France. Events prove us right, though at that time we had no idea of the real state of the case. A report submitted in March last to the Académie des Sciences by a Commission composed of some of the most illustrious French palæontologists and naturalists* announces that the "Grand Prix des Sciences Physiques" for 1865 has been adjudged to M. Alphonse Milne-Edwards for his "Recherches d'anatomie comparée et de paléontologie pour servir à l'histoire de la faune ornithologique française aux époques tertiaires et quaternaires." We are delighted to find that this interesting subject has at length found a worthy expositor. The author of the treatise—if two folio volumes of text and six of plates may be called a treatise—according to the report upon it, has done his work extremely well, and we cannot doubt that, when published, as we hope it soon will be, it will prove of the highest value to all who hold, as we do, that it is impossible from a philosophical point of view to disconnect the sciences of palæontology and zoology. As we recently heard it well put by Prof. Huxley—"Palæontology is simply the biology of the past; and a fossil animal differs only in this regard from a stuffed one, that the one has been dead longer than the other, for ages instead of for days." M. A. Milne-Edwards seems to have thrown great light on the *Ornis* of the French eocene and miocene rocks (the French pliocene formation is without any trace of birds), as well as on that of the quaternary deposits. It is stated that all the fossil birds of the tertiary epoch can be included in the natural groups which still exist; though, as might be expected, none of these species are identical with living forms, and some are types of entirely new genera. On the other hand, of twenty-three birds of the quaternary period determined by him, only one, a Crane of large stature, has become entirely extinct. A very interesting fact, however, has been established; this is, that associated with bones of the Reindeer in the French caverns are those of the Willow-Grouse (*Lagopus albus*) and the Snowy Owl (*Nyctea nivea*), two species not known in France within historic times, and, as our readers are aware, now belonging to a far more northern fauna. Their presence in these deposits is an additional proof, if one were wanted, of the complete change wrought by the glacial epoch. It remains to be said that the results of M. A. Milne-Edwards are chiefly based on the characters afforded by the metatarsal bone—not that he considers this bone to possess greater significance than the sternum or the cranium (for he joins M. Blanchard in declaring that every bird's bone offers peculiarities sufficient for determining, not only the group and the genus, but even the species to which it belongs), but because sterna and crania are rarely met with in fossiliferous beds, while metatarsi with other long bones are abundantly preserved.

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* Rapport sur le Concours pour le grand prix des sciences physiques. Commissaires: MM. d'Archiac, Élie de Beaumont, Daubrée, de Verneuil, de Quatrefages rapporteur. Comptes Rendus des séances de l'Académie des Sciences, 5 Mars, 1866.

We are not, may be, so rich as our continental neighbours in ornitholites, but we hope the admirable researches we have just noticed may induce some of our palæontologists to turn their attention to this important, though neglected, and consequently imperfect, branch of the Geological Record.

3. ITALIAN.

In the 'Ibis' for 1864 (p. 399) was noticed the journey to Persia of Prof. de Filippi and some of its results. Last year he published a full account of the expedition*, consisting of a diplomatic embassy sent by the Italian Government, to which was very laudably attached certain men of science; and his work is a very welcome one, for hitherto our knowledge of Persian ornithology has been extremely limited. Besides numerous isolated facts relating to our science, a complete list of all the species, 167 in number, observed between the Caucasus and Teheran is given (pp. 344–352); five of these were described by the author in the paper formerly noticed, as above, in this journal; and two others, *Crateropus salvadorii* and *Sylvia doriæ*, are now characterized as new. The *Ornis* of Western Persia is most decidedly European in its type, there having been only about five species observed by Prof. de Filippi which do not show themselves in our own quarter of the globe. It is said that the Houbara Bustard of Persia is *Houbara undulata* and not *H. macqueeni*. If so, we suppose it is also the former species which is the "dweller in Mesopotamia," and not the latter as has usually been thought.

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* Note di un Viaggio in Persia nel 1862 di F. DE FILIPPI. Milano: 1865. 8vo, pp. 396.

Dr. Salvadori has had the goodness to send us copies of two papers lately communicated by him to the Italian Society of Natural Sciences. The first* contains the characters of two new genera, *Defilippia* and *Heteronetta*, respectively founded on *Chætusia crassirostris*, De Filippi (J. f. O. 1855, p. 427), and *Anas melanocephala*, Vieillot (Nouv. Dict. v. p. 163), *A. nigriceps*, Lichtenstein—the last specific, being, we believe, the one that should stand, since *melanocephala*, was previously applied by Gmelin to a very different bird. The second† paper consists of the descriptions of eight or nine new birds, *Melaniparus semilarvatus* from the Himalaya, *Megalophonus rufocinnamomeus* from Abyssinia, *Lamprocolius defilippii* from Angola, *Œdicnemus indicus* (= *Œ. crepitans* ex Indiâ), *Œ. inornatus* from the White Nile, *Porphyriops leucopterus* from the Argentine Territory, *Podiceps affinis*, apparently the South American representative of *P. cooperi*, and *Uria craverii* from California, besides a Buzzard from Eastern Africa, about which some doubts are entertained, but for which, if it prove new, the name *Buteo auguralis* is proposed.

4. SCANDINAVIAN.

The trite adage that "a great book is a great evil" is one that is often forcibly impressed upon ornithologists; Professor Sundevall's new catalogue of Woodpeckers‡, which contains in small compass the gist, and, if we are not mistaken, something more, of M. Malherbe's mighty monograph of the same group, will therefore necessarily commend itself to our readers. We need scarcely say to those who are acquainted with the author's previous works that this one also is most admirably executed. We beg leave to say, however, that we do not entirely agree with some of his prefatory remarks. He considers generic subdivisions entirely a matter of convenience; and so far we are at one; but how convenience is consulted by retaining all the known Woodpeckers, of which he enumerates 254, besides some two dozen uncertain or spurious species, in one genus we do not quite see. It is obvious (so it appears to us) that this plan would eventually tend to overthrow the binomial system of nomenclature; for in practice writers would begin to use in an irregular way the names of established sections in order to indicate the group to which belonged any particular species they might happen to mention. At the same time we must characterize the splitting up that the Woodpeckers have lately suffered at the hands of some who have treated of them as most unnecessary, and recommend moderation in the adopting of genera. For the rest, we have to tender our best thanks to the learned author of this little book for the welcome aid it gives to the lovers of a most interesting family of birds.

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* Intorno a due nuovi generi di Uccelli. Atti della Società Italiana di Scienze Naturali. Vol. viii. Milano: 1866.

† Descrizione di altre nuove specie di Uccelli. *Tomo citato.*

‡ Conspectus Avium Picinarum: edidit CAROLUS J. SUNDEVALL. Stockholmiæ: 1866. (London: Williams and Norgate.) 8vo, pp. 116.

5. American.

Among the many favours we owe to Professor Baird, the receipt of a separately printed copy of a paper of his, recently published in the 'American Journal of Sciences and Arts,' is certainly not one of the least. The subject is "The Distribution and Migrations of North American Birds;" and so interesting are its contents, that we must endeavour to reproduce it in our own pages as soon as space will allow. Meanwhile we may say, for the benefit of those of our readers who can gain access to the journal in which it appears, that it will be found in the January, March, and May numbers of Volume XLI. for the present year; and we are exceedingly glad to learn that the investigations on which the present lists and generalizations are founded are being still carried on by Professor Baird and others in the hope of imparting much greater precision to the knowledge of the subject.

Our friend Mr. D. G. Elliot has issued the first part of his 'Birds of North America'*, which is to contain life-sized figures of all the species not included in Audubon's great work. This contains beautifully coloured representations, with accompanying letterpress, of *Haliaetus albicilla*, *Campylorhynchus affinis*, *Colymbus adamsi*, *Cardinalis igneus*, and *Ombria psittacula*. The first of these species, it may be remarked, is perhaps not strictly *American* (*cf.* P. Z. S. 1865, p. 731); but as Mr. Elliot intends to annex Greenland for the purposes of his work, he is of course quite justified in including it.

Since we last noticed Professor Baird's 'Review of American Birds' (Ibis, 1865, p. 534), we have received eight sheets and a quarter more of it, all issued in May and June of the present year. As we before stated, we do not profess to criticize this work at present. The author has introduced the very praiseworthy plan of figuring in outline the most characteristic features of very many of the nearly allied species—a plan which cannot fail to be of the utmost utility in such difficult groups as the *Vireonidæ* for example. Indeed without these figures it would be almost hopeless to attempt to make out the numerous species which have such a close resemblance to one another. We trust that sufficient sheets to make a volume will soon appear, so that it may be generally accessible to the public, which we have been told is not the case at present.

Mr. Cassin has issued a second number of his 'Fasti Ornithologiæ' (Proc. Acad. N. S. Philadelphia, March 1866), which, we are glad to say, is not so revolutionary in its results as the first (*cf.* Ibis, 1865, p. 106), for it would seem that the name of only one species is affected by it. 'Der Naturforscher,' a magazine published at Halle from 1774 to 1804, and edited by Schreber and Walch, is the subject of this paper. We trust that the next treasure disinterred by our excellent friend may be of the same harmless character.

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* The Birds of North America. By D. G. Elliot, F.L.S., F.Z.S., &c. Part I. New York: published by the author, 27 West Thirty-third Street, 1866. Imp. folio.

The same part of the 'Proceedings' of the Academy of Philadelphia also contains a most valuable paper by Mr. Cassin—"A Study of the *Icteridæ*"—which is in the author's best manner, and full of information. At least three new species are described—*Dolichonyx fuscipennis* from North-eastern Brazil, *Molothrus cabanisi*, probably the *Lampropsar dives* of Cabanis (Mus. Hein. i. p. 194, note) but not of Bonaparte, and *M. rufoaxillaris* from Buenos Ayres.

Our kind supporter, Mr. G. N. Lawrence, has published a "Catalogue of Birds observed on New York, Long and Staten Islands, and the adjacent parts of New Jersey" (Ann. Lyc. N. H. New York, vol. viii., April 1866), which contains very many observations of interest. Among them we may notice particularly the successful introduction of the European House-Sparrow (*Passer domesticus*) into the streets of New York, principally through the intervention of Mr. Eugene Schieffelin. "In 1860, and for three years thereafter, he yearly set free five or six pairs, mostly in the neighbourhood of Madison Square; seven pairs were let out in the Central Park, by the Commissioners, in 1864." The extreme cold of last January, says Mr. Lawrence, when the thermometer marked ten degrees below zero, did them no harm; and at the time he wrote, April 15, "several nests are built in the ivy on the church at the corner of Twenty-ninth Street." We need scarcely say that in this, as in all other cases, colonists from our shores have our hearty good wishes for their own prosperity and that of their descendants. Another fact, noticed by Mr. Lawrence, which we may mention, is the supposed occurrence, for the *second* time on record in America*, of the European Woodcock (*Scolopax rusticola*), bought in a market in December 1859, and believed to have been killed near Shrewsbury, New Jersey. Doubtless as ornithological observers increase in number on the other side of the Atlantic, many other cases of the exchange of international courtesies on the part of our birds will come to light: hitherto we have been by far the principal recipients of them, and it is time we should have the credit of giving as well as taking.

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* The *first* recorded instance in Newfoundland (January 9, 1862) was, we believe, that mentioned in the 'Ibis' for 1862 (p. 284).

XXXIV.—*Letters, Announcements, &c.*

The following letters, addressed "To the Editor of 'The Ibis,'" have been received:—

Dobroyde, New South Wales,
24th May, 1866.

Sir,—I have just had the opportunity of examining a fine specimen of that rare bird, *Pycnoptilus floccosus*, Gould, which has been forwarded to Mr. Krefft of the Australian Museum, from South Australia. The label attached to the skin states that it was obtained on the Lower Murray River.

Mr. Gould's specimen, hitherto I believe considered unique, was supposed to have been obtained on the upper part of the Murrumbidgee (P. Z. S. 1850, p. 95). Should this supposition be correct, it shows that this curious form has by no means a very limited range. Had I been aware of the presumed existence of *Pycnoptilus* previously to my recent visit to that river, I might have obtained some information as to its habits; on my return thither, however, I will not neglect the subject.

I am, &c.,
Edward P. Ramsay.

Simla, 15th June, 1866.

Sir,—Colonel Tytler has given me some information respecting the animals introduced by him into the Andaman Islands, when Superintendent there, the publication of which in 'The Ibis' may prevent confusion hereafter arising from the addition of species merely acclimatized to those indigenous to the islands.

With regard to birds, he introduced some six or seven of the Common Calcutta Crow, *Corvus splendens*, of which only two appear to have survived [*anteà*, p. 220].

Acridotheres tristis from Calcutta and *A. fuscus* from Burmah; some four or five of each were imported. Both these species have bred freely, and are now abundant.

Passer montanus from Moulmein and *P. indicus* from Calcutta. A few of the former probably remain, but the latter appears to have been lost sight of. When last seen, there were only two females left on Ross Island. I did not observe either species during my visit in 1865.

The indigenous *Corvus*, which is common there, and which Col. Tytler considers to be quite distinct from *C. culminatus* (an opinion in which I fully concur), he proposes to call *C. andamanensis*. It is very abundant, flies in flocks, and in appearance is closely allied to the Black Hill-Crow of Simla, *C. intermedius*. Although contrary to the opinion expressed by Mr. Blyth [*anteà*, p. 220, note], there seems, to those who have observed its peculiar habits in a state of nature, little doubt of its being a distinct species.

In conclusion, I may mention that *Milvus govinda* may be added to the Andamanese avifauna. Two undoubtedly wild examples were shot on Viper Island, and came into the possession of Col. Tytler, who informs me that he had neither introduced the species himself nor ever heard of any one else doing so. It is, however, quite within the bounds of possibility that these examples may have been blown over in bad weather from the neighbouring coast of Burmah, where the species is abundant.

A *Nectarinia* and an *Arachnothera* have both been seen, but the species remain to be identified.

I am, &c.,
R. C. BEAVAN.

Shoeburyness, 2nd July, 1866.

SIR,—I beg leave to offer a remark on one of Mr. More's notes "On the Distribution of Birds in Great Britain."

Speaking of *Totanus calidris*, he says (Ibis, 1865, p. 435), "A few pairs still breed in Kent and Essex; but the bird is rapidly decreasing in the south, and has almost deserted the fens of the eastern counties." Now, in the low pasture-grounds of the south-eastern portion of this county frequented by *Vanellus cristatus* for breeding purposes, *Totanus calidris* is to be found nesting in about equal numbers. This year I found upwards of a score of nests in a low pasture of a few acres in extent. The nests are most cleverly concealed, being situated in the centre of a green tuft of grass, the blades of which are carefully bent over the top, and the openings by which the bird enters and leaves the nest closed up on her being frightened from it. A few tracks in the surrounding grass are the sole traces of the existence of the nest.

I am, sir, your obedient servant,
W. Vincent Legge.

London, July 1866.

Sir,—I wish to make a few remarks which have occurred to me on reading Mr. Blyth's very interesting commentary in the last Number of 'The Ibis,' on that portion of Dr. Jerdon's work which relates to the birds of prey.

In the first place allow me to correct the error, which I presume, from the footnote to p. 242, that I have accidentally committed, of calling the *Spilornis* obtained by Mr. Swinhoe in Formosa *S. orientalis,* instead of *S. hoya,* by which name that gentleman then designated it, and under which he has since described it (p. 304).

With reference to Mr. Blyth's suggestion in the note to p. 236, that *Falco subniger* may possibly be the immature bird of *F. hypoleucus,* it is worthy of remark that the former occurs, as I have been informed by M. Jules Verreaux, in New Zealand, where, so far as I am aware, the latter has not hitherto been noticed. Specimens of both species are, however, at present so rare, that a sufficient series scarcely exists to settle this question satisfactorily. But my own impression is that these two Falcons are specifically distinct. Nor can I agree with Mr. Blyth in thinking that either of them belongs to "the Sákir and Lanner group;" and I further demur to *F. sacer* being regarded as belonging to the "Lanner group," as it appears to me to be referable to a small distinct section, of which the other members are *F. jugger* and *F. polyagrus.*

In confirmation of Pennant's notice of Eagles being trained by the Tartars to attack Wolves (quoted in the second note to p. 240), allow me to call attention to the following testimony of a traveller in Southern Russia, who, though not a naturalist, was an observer of undoubted veracity:—

In the 'Memoirs of Stephen Grellet' (London, 1860) the following entry appears (vol. i. p. 459) under the date of June 1819:—

"Our road led us afterwards frequently in sight of the Putrid Sea. We met several herds of Camels, flocks of large birds, and some large Eagles. Wolves are very common on these steppes, and they are so bold that they sometimes attack travellers. We passed by a large one lying on the ground with an Eagle, which had probably attacked him, by his side: its talons were nearly buried in his back; in the struggle both had died."

With reference to the question as to the supposed occurrence in India of *Milvus affinis*, I may mention, as one distinction between that species and the smaller individuals of *M. govinda*, that, so far as I have observed, there is no appreciable difference between the old and young bird in the former, whilst in the latter it is very strongly marked, as it is also in *M. melanotis*, if we may follow Mr. Blyth in considering this a distinct race. As to the example of *M. migrans* from Northern China, which is in the Gardens of the Zoological Society, and which Mr. Blyth supposes (*vide* note to p. 248) to be wrongly labelled, I can state positively that such is not the case, for I examined the bird very shortly after its arrival from China, and have kept my eye upon it ever since. It is the only Chinese specimen of *M. migrans* with which I have ever met; but I have seen another example which was procured as far eastward as Afghanistan. As Mr. Blyth alludes to the colour of the eye in this species, I may mention that it varies from pale straw-yellow to dark hazel-brown—a fact of which I was not aware when I wrote a note on the subject, which was inserted in 'The Ibis' for 1859 (p. 207). All the examples of *M. migrans* which I have seen with yellow irides have been adult birds; but I have seen both young and old with brown irides, though paler in the adult than in the immature birds. Whether this difference is sexual, as in the Harriers, or simply casual, as in the Common Buzzard and Golden Eagle, I cannot say, but I think there can be no doubt that, notwithstanding these exceptional cases, the colour of the iris is a most important guide in the true grouping of the birds of prey, and I fully assent to Mr. Blyth's remarks on this point with reference to the Owls in p. 252.

It is a pity that so little care is taken in supplying the mounted specimens of birds in various museums with eyes of the correct colour. As an instance of this I may cite the specimens of *Scotopelia peli* in the British Museum, which are furnished with eyes like those of an Eagle-Owl, instead of with eyes as dark as those of a *Strix*. That this is the case in the living bird may be seen in the example figured in 'The Ibis' for 1859 (pl. xv.), which, after having lived several years in my possession, is now in the collection of the Zoological Society.

I am, &c.,
J. H. GURNEY.

10th July, 1866.

SIR,—On the 6th instant I shot at Teesmouth a Swallow of the race to which the names *Hirundo riocouri, H. cahirica, H. savignii,* and *H. boissoneauti* seem to have been variously applied. It was a male, and agrees in all respects with specimens in Mr. Tristram's collection, brought from Palestine and marked "*Hirundo cahirica,*" but is not so deeply coloured as the example from Egypt in that gentleman's possession, which was figured by Dr. Bree (Birds of Europe, iii. p. 170).

I am, &c.,
J. H. GURNEY, JUN.

Chislehurst, August 1866.

SIR,—Since the publication of my remarks "On the *Muscicapa melanictera* of Gmelin" (*anteà*, pp. 316–323), I have been favoured by Mr. Gould with a view of what he assures me is the type-specimen of his *Brachypus gularis*. It is undoubtedly an example of the species described under the name of *B. rubineus* by Dr. Jerdon; and as Mr. Gould's appellation possesses a priority of several years, Dr. Jerdon's designation must be superseded by it. *B. gularis*, Gould, must also cease to be regarded as a synonym of *Ægithina atricapilla*, Vieillot (*Muscicapa melanictera,* Gmelin); and I regret that, being misled by the short diagnosis of *B. gularis* given by Mr. Gould (P.Z.S. 1835, p. 186), accidentally omitting as it does one of the most essential characteristics of the bird, I fell into the error of so regarding it—an error, however, I shared in common with Professor Sundevall and other ornithologists.

I have the honour, &c.,
WALDEN.

Nottingham, August 29th, 1866.

SIR,—I regret to say that an error has crept into Dr. Hartlaub's account of *Phlexis layardi* described by him (*anteà*, p. 139). Its habitat is not "Natal," but the George District of the Cape Colony, where it was procured by my friends Messrs. W. and T. Atmore.

I am Sir, &c.,
E. L. LAYARD.

Professor S. F. Baird has been good enough to forward to us the following communication:—

"Messrs. Philippi and Landbeck have published descriptions of a considerable number of new species of birds of Chile and Peru in Wiegmann's 'Archiv für Naturgeschichte,' as is doubtless well known to most readers of 'The Ibis.' It may not, however, be so well understood that nearly all these descriptions had previously appeared in the 'Anales de la Universidad de Chile,' Santiago, and that consequently the dates given in the 'Archiv' do not represent strictly those of the first introduction of the species to notice. The principal papers of these authors which are embraced in the series of 'Anales' thus far received by the Smithsonian Institution are as follows:—

"'Descripcion de una nueva especie de pajaros del jenero *Thalassidroma*,' Anales, xviii. Jan. 1861, p. 27. (*T. segethi.*)

"'Descripcion de una nueva especie de pajaros del jenero *Caprimulgus*,' Anales, xviii. Jan. 1861, p. 29. (*C. andinus.*)

"'Descripcion de algunas especies nuevas de pajaros,' Anales, xviii. June 1861, p. 731. (*Upucerthia albiventris*, *Larus frobeeni*, *L. cinereocaudatus.*)

"'Sobre los especies chilenos del jenero *Tulica*' (*Fulica*), Anales, xix. Oct. 1861, p. 501. (*F. rufifrons.*)

"'Sobre los gansos chilenos,' Anales, xxi. Nov. 1862, p. 427. (*Bernicla dispar*, Ph. et L.; *B. chiloensis*, Ph.)

"'Descripcion de una nueva especie de pato del Peru,' Anales, xxi. 1862, p. 439. (*Querquedula angustirostris*, Ph. et L.)

"'Descripcion de una nueva golondrina de mar,' Anales, xxi. Nov. 1862, p. 440. (*Sterna atrofasciata.*)

"'Contribuciones a la Ornitologia de Chile,' Anales, xxiv. April 1864, p. 336. (*Dendrœca atricapilla, Arundinicola citreola, Chlorospiza plumbea, Sycalis aureiventris, Accipiter chilensis.*)"

We think that at no time have the ornithologists of this country been so active as they appear to be at present. The 'Exotic Ornithology' of our friends Messrs. Sclater and Salvin (the first part of which will probably have made its appearance before these pages meet the eyes of our readers) will be a worthy successor of the 'Planches Enluminées,' the 'Planches Coloriées,' and the 'Iconographie Ornithologique.' Indeed we have every reason to expect that the letterpress will be far superior to that of those celebrated works, as the intention of the authors is to make it a series of monographic essays.

Mr. E. L. Layard, who, as some of our readers are aware, has long been collecting materials for a work on the birds of South Africa, has been in England for the last six months to complete his preparations. Mr. Layard returns to the Cape of Good Hope in the course of the autumn, and, we understand, will immediately take steps for the publication of this desirable volume, which is nearly ready for the press, and will be printed at Cape Town. Everybody knows that the study of the birds of South Africa is beset with very great difficulty. There is not at present even a bare catalogue of their names, while the descriptions of the various species inhabiting the Cape Colony are scattered throughout many different publications, few of which are within the reach of most private persons. We are sure our readers will join with us in our best wishes for our friend's safe return to his southern home, and for the success of his intended work.

'The Birds of Middlesex' is the title of a volume by Mr. J. E. Harting, which is to appear forthwith; while, we believe, the first volume of Mr. H. Stevenson's 'Birds of Norfolk' may be expected about the close of the year. Mr. A. W.

Crichton's 'Naturalist's Ramble to the Orcades,' being a collection of letters printed some time since in a popular sporting newspaper, is also announced for immediate publication in a separate form*.

Though we unfortunately cannot claim the well-known African explorer Mr. C. J. Andersson as more than half an Englishman, we must not refrain from mentioning here the great design he has in contemplation, and which, provided he can obtain the requisite support, he will certainly carry out. This is the publication of a work on the birds of South-western Africa, to consist of three volumes in Royal 8vo., *illustrated by upwards of four hundred and fifty* tinted or coloured plates, by Messrs. Baines and Wolf. Those who know anything of the expense of producing such a work as Mr. Andersson contemplates will be surprised to learn that publishers have been found who undertake to bring out 'The Avifauna of South-western Africa' at the price to subscribers of *five guineas* only; but to guard themselves from loss they require a guarantee of five hundred subscribers. We trust the five hundred may be forthcoming, so that this grand design may not fall through; and we ourselves shall be very happy to receive and forward to Mr. Andersson the names of any intending subscribers. We may add that this project in no way interferes with that of Mr. Layard. The work of the last-named gentleman is specially on the birds of the Cape Colony, and is limited to the species which occur south of lat. 28°, from which line Mr. Andersson proposes to start, and include those which occur between the Orange River, Cunene, Okavango, Teouge, and the Lake N'gami country, for the knowledge of which we are almost entirely indebted to his indefatigable efforts, which hitherto unfortunately have obtained for him but little reward for the toil, the hardships, the dangers, and the disasters he has undergone in their pursuit.

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* The works of Mr. Harting and Mr. Crichton have been published since the above was written.

INDEX.

Acanthogenys rufigularis, 330.
Acanthylis caudacuta, 339.
—— ciris, 339, 346.
—— coracina, 339.
—— gigantea, 339, 341.
—— leucopygialis, 339.
—— sylvatica, 339.
Accentor alpinus, 391.
—— modularis, 177, 391.
Accipiter chilensis, 425.
—— fringillarius, 239.
—— gularis, 239, 240, 246.
—— mexicanus, 267.
—— nisoides, 239, 240, 246,
—— nisus, 240, 386.
—— virgatus, 240.
Aceros nipalensis, 350, 351.
Acredula caudata, 383.
Acridotheres cristatellus, 293.
—— fuscus, 419.
—— siamensis, 293.
—— tristis, 220, 419.
Acrocephalus arundinaceus, 185.
Actitis hypoleuca, 187.
Actiturus bartramius, 38.
Actodromas minutilla, 269.
Æchmophorus occidentalis, 273.
Ædemosyne modesta, 329.
Ægialites azaræ, 197.
—— cantianus, 100, 107, 184.
—— collaris, 197.
—— minor, 184, 378.
—— montanus, 33, 266.
—— nigrifrons, 334.
—— nivosus, 196, 274.
—— semipalmatus, 34.
—— vociferus, 33.
—— wilsonius, 34, 197.
Ægialophilus ruficapillus, 334.
Ægintha temporalis, 329.
Ægithaliscus niveogularis, 221.
Ægithina atricapilla, 317, 318, 320, 321, 423.
—— quadricolor, 318.
Æthyia americana, 43.
—— vallisneria 43, 198.
Agelæus gubernator, 52, 267.
—— phœniceus, 52, 267.
—— tricolor, 52, 267.
Aix galericulata, 295.
—— sponsa, 43, 296.
Alauda arborea, 287.
—— arvensis, 185, 288.
—— brachydactyla, 185.
—— calandra, 185.
—— cantarella, 287.
—— cristata, 177, 184, 185.
—— deserti, 287.
—— fraterculus, 287.
—— isabellina, 287.
Alca impennis, 223, 224.
—— torda, 16.
Alcedo alcyon, 86.
—— asiatica, 348.
—— bengalensis, 292, 348, 349.
—— euryzona, 348.
—— fusca, 348.
—— grandis, 348, 363.
—— ispida, 84, 178, 348, 349.
—— meningting, 348.
—— minor, 348.
—— moluccensis, 348.
—— nigricans, 348.
—— sondaica, 348.
—— verrauxi 348.
Alcippe morrisonia, 400.
Alcyone azurea, 327.
—— pusilla, 328.
Alseonax ferrugineus, 371.
Amazillia arsinoe, 204.
—— corallirostris, 204.
Ammodromus petenicus, 193.
Ammomanes isabellinus, 283.
Ampelis garrulus, 130.
—— phœnicoptera, 307.
Amydrus tristrami, 75.
Anas baeri, 118.
—— boschas, 42, 102, 107, 187, 394.
—— crecca, 102, 107.
—— melanocephala, 415.
—— nigriceps, 415.
—— obscura, 42.
—— pœcilorhyncha, 394.
—— punctata, 335.
—— superciliosa, 335.
—— zonorhyncha, 394.
Anous tenuirostris, 200.
Anser gambeli, 42, 269.
—— hyperboreus, 41, 269.
—— segetum, 394.
Anthochæra carunculata, 330.
Anthus arboreus, 180, 290.
—— campestris, 178, 289.
—— cervinus, 290.
—— ludovicianus, 264, 266, 268.
—— parvus, 119.
—— pratensis, 289.
—— rufus, 119.
—— spinoletta, 289.
Antrostomus carolinensis, 195.
Aptenodytes demersa, 324.
Apterornis cærulescens, 164, 167.
Aquila bonellii, 184.
—— chrysaetus, 179, 240, 241, 386.
—— clanga, 241, 258.
—— fulvescens, 241.
—— hastata, 241.
—— heliaca, 174, 381, 386.
—— leucorypha, 244.
—— nævia, 258.
—— nævioides, 241, 381.
—— pennata, 177, 185, 186, 379, 388, 391.

Ara macao, 169, 170.
Arachnechthra asiatica, 221.
—— currucaria, 364.
—— lotenia, 364.
Arachnothera aurata, 364.
—— longirostra, 350.
—— magna, 364.
—— pusilla, 350, 364.
Aramides zelebori, 116.
Arboricola torqueola, 133.
Archibuteo ferrugineus, 267.
—— lagopus, 258.
—— sancti-johannis, 242.
—— strophiatus, 245.
Ardea alba, 101.
—— cinerea, 13, 100.
—— egretta, 107.
—— garzetta, 101, 107.
—— herodias, 31, 263, 264, 269.
—— melanolopha, 123.
—— novæ-hollandiæ, 335.
—— pacifica, 335.
—— purpurea, 101, 107.
Ardeola minuta, 384.
Ardetta exilis, 32, 196, 263.
—— minuta, 101, 107, 185.
Artamus fuscus, 369.
—— leucogaster, 221.
—— minor, 325, 337.
—— sordidus, 327.
Arundinicola citreola, 425.
Ascalaphia ascalaphus, 253.
—— bengalensis, 253.
—— coromanda, 253, 254.
Asio brachyotus, 180.
—— otus, 94, 106, 180.
Astur approximans, 326.
—— melanoleucus, 242.
—— trivirgatus, 395.
Asturina nitida, 204.
Athene bactriana, 257.
—— brama, 257.
—— castanoptera, 257.
—— castanotus, 227, 238, 257.
—— cunicularia, 266.
—— gymnopus, 257.
—— hypogæa, 266.
—— noctua, 179, 388.
—— persica, 257, 258.
—— radiata, 238, 257.
—— sonnerati, 257.
—— sylvatica, 258.
Athene whitneyi, 260.
Atticora leucosternon, 338.
Auriparus flaviceps, 263.

Bambusicola sonorivox, 134, 404, 406.
Basileuterus delattrii, 192.
—— rufifrons, 192.
Baza lophotes, 239, 249.
Bernicla brenta, 42.
—— canadensis, 42, 269.
—— chiloensis, 424.
—— dispar, 424.
—— hutchinsi, 42, 269.
—— nigricans, 269.
Blagrus leucogaster, 247, 258.
Blasipus heermanni, 272.
Bonasa sabinii, 213.
—— sylvestris, 213.
—— umbelloides, 213.
—— umbellus, 213.
Botaurus lentiginosus, 32, 196, 263.
—— melanotus, 113.
—— stellaris, 101, 107.
Brachyotus cassini, 196.
Brachypternus ceylonus, 355.
—— dilutus, 356.
Brachypteryx cruralis, 373.
—— leucophrys, 373.
—— montana, 373.
Brachypus aberrans, 320.
—— gularis, 318, 319, 321, 423.
—— rubineus, 318, 319, 320, 322, 323, 423.
Bradypterus brevirostris, 140.
—— ruficoccyx, 140.
—— sylvaticus, 140.
—— victorini, 139.
Bruchigavia jamesoni, 335.
Bubo africanus, 252.
—— ascalaphus, 180.
—— cinerascens, 252.
—— fasciolatus, 252.
—— lacteus, 252, 253.
—— maximus, 174, 180, 258.
—— nipalensis, 254.
—— orientalis, 254.
—— pectoralis, 254.
—— poensis, 252.
Bucco luteus, 358.
Bucephala albeola, 44.
Buceros albirostris, 352.
—— cineraceus, 350.
—— convexus, 352.
—— coronatus, 352.
—— griseus, 350.
—— lunatus, 352.
—— malayanus, 352.
—— pasuran, 350.
—— rhinoceros, 352.
—— ruficollis, 350, 351.
—— subruficollis, 350.
—— violaceus, 349.
Budytes cinereocapilla, 290.
—— citreola, 410.
—— citreoloides, 409, 410.
—— flava, 187, 290, 386, 391.
—— nigrocapilla, 290.
—— rayi, 290.
—— taivana, 138.
Bulaca indrani, 252.
—— monticola, 252.
—— newarensis, 252.
—— ocellata, 253.
—— sinensis, 253.
Burnesia lepida, 133.
Butalis griseosticta, 131.
—— grisola, 371.
—— hypogrammica, 131.
Butaquila leucocephala, 244, 245.
Buteo aquilinus, 244, 245.
—— asiaticus, 244, 246, 258.
—— auguralis, 415.
—— canescens, 244.
—— cirtensis, 244.
—— cooperi, 267.
—— desertorum, 94, 244.
—— elegans, 267.
—— ferox, 244.
—— hemilasius, 244, 246.
—— japonicus, 245, 246.
—— leucocephala, 245.
—— plumipes, 245, 246.
—— pygmæus, 245, 246.
—— pyrrhogenys, 245.
—— rufinus, 244.
—— rufiventris, 244.
—— tachardus, 244.
—— vulgaris, 94, 106, 175, 245.
—— zonocercus, 267.
Butorides flavicollis, 335.
—— javanica, 221, 297, 335, 402, 403.
—— virescens, 32, 263.

Cacatua galerita, 332.
Caccabis petrosa, 384.

Caccabis rufa, 99, 107, 176, 384.
—— saxatilis, 384.
Cacomantis cineraceus, 272.
—— flabelliformis, 331.
—— infuscatus, 172.
—— pallidus, 331.
—— simus, 172.
Calamodyta arundinacea, 180, 185.
Calamoherpe canturians, 397.
—— minuta, 309, 397.
Calandrella brachydactyla, 286.
—— deserti, 286.
—— hermonensis, 286.
Callene frontalis, 373.
—— rufiventris, 373.
Calliope kamtschatkensis, 397.
Callipepla squamata, 28.
Calopsitta novæ-hollandiæ, 332.
Calyptorhynchus banksi, 332.
Campephaga humeralis, 328.
—— karu, 325.
—— leucomela, 325, 328.
—— macii, 368.
—— sykesi, 368.
Campephilus guatemalensis, 204.
—— imperialis, 204.
Campylopterus delattrii, 204.
Campylorhynchus affinis, 415.
—— brunneicapillus, 264.
—— capistratus, 191, 202.
—— megalopterus, 366.
—— rufinucha, 191, 202.
Canace canadensis, 52, 213.
—— franklini, 213.
Capito lineatus, 359.
Caprimulgus affinis, 349.
—— albinotatus, 341.
—— americanus, 203.
—— andinus, 424.
—— asiaticus, 75, 326, 342.
—— europæus, 76, 180, 342, 378.
—— indicus, 349.
—— isabellinus, 76.
—— jamaicensis, 203.
—— kelaarti, 349.
—— macrurus, 341, 342.
—— mahrattensis, 342.
Caprimulgus monticolus, 316, 342, 349.
—— nigripennis, 342.
—— ruficollis, 76, 180, 184, 378.
—— rufigena, 75.
—— stictomus, 315, 402.
—— tamaricis, 75.
Cardellina rubrifrons, 192.
—— versicolor, 192.
Cardinalis igneus, 415.
—— virginianus, 193.
Carduelis elegans, 176, 212.
Carphibis spinicollis, 335.
Carpodacus erythrinus, 228.
—— frontalis, 267.
—— rhodochrous, 412.
Carpophaga frauenfeldi, 116.
Catharus frantzii, 190.
Catherpes mexicanus, 261.
Catreus wallichi, 409.
Catriscus apicalis, 140.
Ceblepyris aterrima, 368.
—— cærulescens, 368.
Centrocercus urophasianus, 213, 265.
Centropus affinis, 293.
—— chlororhynchus, 227.
—— philippensis, 293.
Certhia americana, 190.
—— asiatica, 365.
—— discolor, 365.
—— familiaris, 284, 365, 389.
—— himalayana, 365.
—— mexicana, 365.
—— nipalensis, 365.
—— spilonota, 365.
Certhilauda desertorum, 289.
Ceryle alcyon, 263.
—— americana, 204, 263.
—— cabanisi, 204.
—— rudis, 84, 88, 292, 349.
Chætura vauxi, 205.
Chætusia crassirostris, 415.
Chalcophaps indicus, 221.
Chalcopsitta rubiginosa, 116.
Chamæospiza torquata, 205.
Chamæpelia passerina, 24.
Chaptia brauniana, 399.
Charadrius cantianus, 274.
Charadrius longipes, 134.
—— pluvialis, 178.
—— virginicus, 33.
Charitornis albertinæ, 210.
Chasmorhynchus albus, 407.
—— nudicollis, 407.
—— tricarunculatus, 406, 407.
—— variegatus, 406, 407.
Chaulelasmus streperus, 43.
Chelidon arborea, 127.
—— ariel, 126, 127.
Chelidorhynx hypoxantha, 371.
Chenopis atrata, 335.
Chibia hottentota, 369.
Chiroxiphia linearis, 203.
Chlamydochen jubata, 335.
Chlamydodera maculata, 329.
—— nuchalis, 329.
Chleuasicus ruficeps, 301.
Chlorolampis osberti, 204.
Chlorophanes atricapilla, 203.
—— guatemalensis, 203.
Chloronerpes caboti, 206.
—— oleaginus, 206.
Chlorospiza plumbea, 425.
Chlorostilbon caniveti, 204.
Chroicocephalus atricilla, 44.
—— cucullatus, 198.
—— philadelphia, 263, 272.
Chrysocolaptes festivus, 355.
—— delesserti, 349.
—— hæmatribon, 355.
—— stricklandi, 355.
—— sultaneus, 349.
Chrysomitris atriceps, 194.
Chrysonotus intermedius, 356.
—— tridactylus, 356.
Chrysophlegma flavinucha, 356.
—— malaccensis, 356.
—— miniata, 356.
Chrysotis levaillanti, 195.
Ciccaba nigrolineata, 195.
Ciconia alba, 386.
—— nigra, 401.

Cinclorhamphus cantillans, 328, 329.
—— cruralis, 328.
Cinclus aquaticus, 291, 374, 390.
—— mexicanus, 190.
Circaetus bacha, 243.
—— celebensis, 243.
—— gallicus, 182.
Circus æruginosus, 185.
—— hudsonius, 266, 267.
—— melanoleucus, 246.
Cissa ornata, 227.
Cisticola exilis, 328.
—— isura, 336.
—— lineocapilla, 328.
—— ruficeps, 328.
Cistothorus palustris, 265.
Cittocincla auricularis, 109.
Coccothraustes abeillii, 206.
—— maculipennis, 206.
—— vulgaris, 178.
Coccystes coromandus, 364.
—— melanoleucus, 364.
Collocalia fuciphaga, 221, 341.
Columba flavirostris, 23.
—— laurivora, 99.
—— livia, 99, 107.
—— nigrirostris, 206.
—— palumbus, 99, 107, 390.
—— polleni, 211.
—— solitaria, 23.
—— trocaz, 99.
Colymbus adamsi, 415.
—— arcticus, 273.
—— glacialis, 273.
—— pacificus, 272, 273.
—— septentrionalis, 273.
—— torquatus, 46, 273.
Contopus borealis, 203.
—— mesoleucus, 203.
—— pertinax, 203.
—— sordidulus, 203.
Copsychus mindanensis, 293.
—— saularis, 220, 293, 301, 400.
Coracias affinis, 345.
—— bengalensis, 345.
—— garrula, 81, 345.
—— indicus, 345.
—— pileata, 346.
—— temmincki, 344, 345, 346.
Corvus affinis, 60, 71, 73.
—— agricola, 68, 69.
Corvus andamanensis, 420.
—— caurinus, 208.
—— collaris, 65.
—— colonorum, 296, 401, 402.
—— corax, 60, 68, 69, 70, 71, 73, 187, 240.
—— cornix, 64, 69, 282.
—— corone, 65.
—— culminatus, 220, 420.
—— intermedius, 420.
—— monedula, 65, 69.
—— pastinator, 67.
—— splendens, 220, 249, 282, 419.
—— umbrinus, 60, 68, 69, 70, 71, 73.
Coturnix communis, 99, 107, 184.
—— pectoralis, 334.
Cotyle minuta, 338.
—— riparia, 192, 338.
—— sinensis, 134, 338.
—— subsoccata, 338.
Crateropus chalybeius, 283, 292.
—— salvadorii, 415.
Crex pratensis, 102, 107.
Crithagra butyracea, 349.
—— chrysopogon, 349.
Cryptolopha cinereocapilla, 371.
Cuculus affinis, 349, 359, 360.
—— canorinus, 359.
—— canoroides, 130, 359.
—— canorus, 177, 283, 349, 359, 360, 361, 362, 363.
—— cineraceus, 331.
—— dicruroides, 349.
—— erythrorhynchus, 364.
—— flaviventris, 361.
—— flavus, 349, 363.
—— fuscatus, 360.
—— hepaticus, 283.
—— himalayanus, 349, 359.
—— horsfieldi, 359.
—— indicus, 359.
—— intermedius, 360.
—— kelungensis, 359.
—— lepidus, 360.
—— libanoticus, 283, 359.
—— lineatus, 359.
—— lugubris, 349.
—— merulinus, 363.
—— micropterus, 349, 359, 360.
Cuculus monosyllabicus, 130, 360.
—— optatus, 330, 331, 359.
—— passerinus, 363.
—— poliocephalus, 349, 360, 363.
—— radiatus, 361.
—— saturatus, 359.
—— sonnerati, 360.
—— sparverioides, 361.
—— striatus, 346, 359, 361, 363.
—— swinhoii, 359.
—— teleophonus, 359.
—— tenuirostris, 349, 360.
Cupidonia cupido, 26, 213.
Curruca heinekeni, 96.
Cyanocitta californica, 265.
—— unicolor, 194.
—— woodhousii, 265.
Cyanomyia cyanocephala, 204.
—— guatemalensis, 204.
Cyanopica cooki, 174, 378, 391.
Cyanornis erythrorhyncha, 164, 167.
Cyanurus macrolophus, 48.
Cygnus americanus, 41.
—— buccinator, 41.
—— musicus, 117.
Cyornis banyumas, 371.
—— elegans, 371.
—— jerdoni, 571.
—— magnirostris, 371.
—— pallipes, 372.
—— rubeculoides, 371.
—— rufifrons, 372.
—— vivida, 371, 393.
Cypselus abyssinicus, 74, 76, 78, 79, 339.
—— acuticauda, 339.
—— affinis, 74, 76, 131, 133, 219, 338, 339, 340.
—— ambrosiacus, 340.
—— apus, 77, 79, 180, 339.
—— australis, 340.
—— batassiensis, 340.
—— galilæensis, 74, 76, 133, 339.
—— leuconyx, 339, 340.
—— melba, 77, 79, 391.
—— pacificus, 340, 346.
—— parvus, 340.
—— subfurcatus, 131, 133, 339.

Cypselus vittatus, 340.
Cyrtonyx massena, 29.

Dafila acuta, 43, 263.
Daption capensis, 125.
Defilippia crassirostris, 415.
Demiegretta ludoviciana, 31, 196.
—— pealii, 31, 196.
—— rufa, 31, 196.
Dendragapus obscurus, 213.
—— richardsoni, 213.
Dendrocitta formosæ, 296, 394.
—— himalayensis, 394.
—— sinensis, 296, 394.
Dendrocygna autumnalis, 42.
—— fulva, 42.
Dendrodromus leucosternus, 366.
Dendrœca atricapilla, 425.
—— canadensis, 205.
—— niveiventris, 191.
—— occidentalis, 191.
—— olivacea, 191.
—— striata, 262.
—— vieilloti, 192.
Dendrophila azurea, 366.
—— flavipes, 366.
—— frontalis, 366.
Dendrotypes nesiotes, 354.
Dicæum coccineum, 365.
—— concolor, 365.
—— minimum, 365.
Dichoceros bicornis, 351.
Dicrurus macrocercus, 121, 345, 350, 369, 399.
—— minor, 350.
—— waldeni, 211.
Didus ineptus, 128, 141.
Diomedea brachyura, 124.
—— exulans, 124, 125.
—— fuliginosa, 124.
—— melanophrys, 124.
Dolichonyx fuscipennis, 418.
—— oryzivora, 194.
Dromolæa leucura, 409.
—— leucuroides, 409.
—— opistholeuca, 409.
—— picta, 409.
Drymœca gracilis, 133.
Dryobates minor, 98, 107.

Edolius malabaricus, 369.
—— malayensis, 221.
—— paradiseus, 369.
Edolius rangoonensis, 369.
—— viridescens, 369.
Egretta alba, 295.
Elainea chiriquensis, 214.
—— frantzii, 214.
—— semiflava, 214.
Emberiza hortulana, 388.
Ephialtes bakkamæna, 255, 256.
—— griseus, 256.
—— gymnopodus, 255.
—— lempiji, 256.
—— lettia, 252, 256.
—— lettioides, 256.
—— leucospila, 256.
—— magicus, 256.
—— malayanus, 256.
—— mantis, 256.
—— menadensis, 256.
—— rufescens, 256.
—— rufitorques, 256.
—— sagittatus, 256, 257.
—— sylvicolus, 256.
Eremophila cornuta, 266.
Ereunetes pusillus, 269.
Erythacus rubecula, 95, 106, 177, 388.
Erythrauchenia humeralis, 334.
Erythropus amurensis, 238.
—— cenchris, 239.
—— vespertinus, 238, 239.
Erythrosterna acornaus, 373.
—— leucura, 314, 372.
—— maculata, 373.
—— parva, 314, 372.
—— pusilla, 373.
Estrelda amandava, 293, 349.
—— punicea, 349.
Eudocimus ruber, 206.
Eudynamis australis, 131, 363.
—— facialis, 364.
—— flindersi, 363.
—— melanorhynchus, 364.
—— mindanensis, 363.
—— orientalis, 131, 282, 363.
—— punctatus, 364.
—— picatus, 364.
—— ransomi, 364.
—— taitensis, 364.
Eulabes ptilogenys, 227.
Eumyias melanops, 371.
Euphema pulchella, 332.
Euplocamus swinhoii, 133, 308, 404, 405.
Eurypyga helias, 137, 205.
—— major, 205.
Eurystomus australis, 129, 345, 346.
—— azureus, 346.
—— gularis, 346.
—— orientalis, 129, 345, 346.
—— pacificus, 327, 345, 348.
—— pileatus, 346.
Eurystopodus albogularis, 326.
Eutolmaetus bonellii, 241.

Falcinellus igneus, 335.
Falcipennis hartlaubi, 213.
Falco asiaticus, 244.
—— amurensis, 119.
—— babylonicus, 221, 236, 237.
—— barbarus, 181.
—— biarmicus, 236.
—— bido, 243.
—— bosschii, 237.
—— cærulescens, 239.
—— caligatus, 241.
—— cherrug, 221.
—— communis, 236.
—— hypoleucus, 236, 421.
—— indicus, 236.
—— jugger, 234, 236, 421.
—— limnaetus, 242.
—— melanogenys, 234, 236.
—— nigriceps, 267.
—— peregrinator, 234, 237.
—— peregrinoides, 236, 237.
—— peregrinus, 16, 234, 235, 237.
—— poliogenys, 245.
—— polyagrus, 267, 421.
—— ruber, 235, 236.
—— rufipes, 239.
—— sacer, 421.
—— shahin, 236.
—— subniger, 236, 421.
—— sultaneus, 236.
—— vespertinus, 119.
Ficedula hypolais, 388.
Florida cærulea, 31.
Formicivora schisticolor, 214.
Fratercula arctica, 16.

Fregilus graculus, 74, 131, 349.
—— himalayanus, 349.
Fringilla carduelis, 212.
—— cœlebs, 97, 177.
—— moreleti, 97, 105, 107, 108.
—— spodiogena, 97.
—— tintillon, 97, 108.
Fulica americana, 40, 263.
—— atra, 102, 107.
—— gigas, 164.
—— rufifrons, 424.
Fuligula baeri, 118.
—— cristata, 119.
—— ferinoides, 119.
—— homeyeri, 119.
—— marila, 119.
Fulix affinis, 43.
—— collaris, 43.
—— marila, 43.

Galbula melanogenia, 407.
—— ruficauda, 407.
—— rufoviridis, 407.
—— viridis, 407.
Galerita abyssinica, 288.
—— brachyura, 288.
—— cristata, 288, 289, 380.
—— theclæ, 380.
Gallicrex cristata, 297.
Gallinago australis, 334.
—— media, 101, 107, 294.
—— solitaria, 134, 294.
—— stenura, 294.
—— wilsoni, 36, 205, 265.
Gallinula alba, 159.
—— chloropus, 102, 107, 177.
—— galeata, 198.
—— gigantea, 167.
—— martinica, 41.
Gallus stanleyi, 226.
Galloperdix zeylanensis, 226.
Gambetta flavipes, 38.
—— melanoleuca, 38, 269.
Garrulax cinereifrons, 227.
—— pœcilorhynchus, 303.
—— taivanus, 401.
Garrulus atricapillus, 62.
—— cervicalis, 61, 62.
—— glandarius, 62, 176, 280.
—— krynicki, 62.
—— melanocephalus, 61, 62, 282.
Garrulus stridens, 62.
Garzetta candidissima, 31, 263, 269.
Gecinus canus, 175.
—— viridis, 175, 209.
Gelochelidon anglica, 199.
Geocichla chrysolaus, 375.
—— citrina, 374.
—— dissimilis, 375.
—— erythronota, 375.
—— rubecula, 374.
—— rubiginosa, 375.
—— unicolor, 374, 375.
Geopelia placida, 334.
—— tranquilla, 334.
Geophaps scripta, 333.
Geotrygon albiventer, 120.
—— chiriquensis, 121.
Gerygone aucklandica, 115.
Glaucidium brodiei, 258.
—— gnoma, 260.
Glottis glottoides, 334.
Glycyphila fasciata, 325.
Glyphorhynchus cuneatus, 205.
—— major, 205.
—— pectoralis, 205.
Gorsachius goisagi, 122, 123, 403.
—— melanolophus, 227.
Gracula intermedia, 221.
Graculus dilophus, 270.
—— javensis, 350.
—— macii, 350.
—— mexicanus, 45.
—— penicillatus, 270.
Grallina picta, 327.
Graucalus dussumieri, 368.
—— hypoleucus, 325.
—— javensis, 368.
—— layardi, 368.
—— macii, 368, 394.
—— melanops, 327.
—— mentalis, 327.
—— papuensis, 368.
—— rex-pineti, 393, 402.
Grus americana, 30.
—— canadensis, 30, 263, 266.
—— cinerea, 117.
—— fraterculus, 30.
—— leucogeranus, 222.
Guiraca melanocephala, 53.
Gymnorhina tibicen, 327.
Gypaetus barbatus, 391.
Gyps bengalensis, 232, 233.
—— calvus, 233.
Gyps fulvus, 187, 232, 233, 386, 391.
—— indicus, 233.
—— occidentalis, 232.
—— rueppelli, 232.

Hæmatopus palliatus, 34.
Hæmatornis bacha, 243.
—— elgini, 243.
—— undulatus, 242.
Halcyon amauropterus, 347.
—— atricapillus, 348.
—— coromanda, 138.
—— coromandelicus, 348.
—— fuscus, 86, 221, 347.
—— gurial, 347.
—— javana, 347.
—— leucocephalus, 221, 347.
—— smyrnensis, 74, 85, 86, 347.
Haliaetus albicilla, 240, 258, 415.
—— fulviventer, 244.
—— leucogaster, 221.
—— leucoryphus, 244.
—— lineatus, 243.
—— macii, 244.
—— pelagicus, 240, 258.
Haliastur girrenera, 246.
—— indus, 246.
—— intermedius, 247.
—— leucosternus, 216, 247.
—— sphenurus, 247.
—— vocifer, 247.
Haliplana discolor, 199.
—— fuliginosa, 199, 200.
—— panayensis, 199.
Harpactes diardi, 409.
—— erythrocephalus, 342, 343.
—— fasciatus, 342.
—— hodgsoni, 342, 409.
—— orescius, 409.
—— mackloti, 409.
—— reinwardti, 409.
Harporhynchus crissalis, 259.
—— lecontii, 259.
Heliomaster longirostris, 205.
—— pallidiceps, 205.
Helminthophaga celata, 262.
—— luciæ, 260.
Hemicercus canente, 349, 354.
—— coccometopus, 354.

Hemicercus concretus, 354.
—— cordatus, 349.
—— hartlaubi, 354.
—— sordidus, 354.
Hemichelidon fuliginosa, 371.
Hemipus capitalis, 368.
—— picæcolor, 368.
—— picatus, 368.
Henicurus frontalis, 350.
—— speciosus, 350.
Herodias egretta, 31, 263, 269.
—— flavirostris, 113.
—— melanopus, 335.
Herpornis xantholeuca, 394.
Hetærornis sinensis, 138.
Heteronetta nigriceps, 415.
Hiaticula geoffroyi, 134.
Hieraetus morphnoides, 241.
—— pennatus, 241, 245.
Hierax eutolmus, 239.
—— fringillarius, 239.
—— malayensis, 239.
—— melanoleucus, 363.
Hierococcyx flaviventris, 362, 363.
—— fugax, 361.
—— hyperythrus, 362.
—— nisicolor, 361, 362.
—— nisoides, 349, 362, 363.
—— pectoralis, 362.
—— sparverioides, 349, 362, 363.
—— strenuus, 362.
—— varius, 361, 363.
Himantopus leucocephalus, 334.
—— nigricollis, 35, 263.
Hirundo alpestris, 337.
—— apus, 340.
—— boissoneauti, 423.
—— cahirica, 237, 336, 423.
—— caudacuta, 339.
—— ciris, 339.
—— concolor, 228, 349.
—— daurica, 237, 337.
—— domicola, 336.
—— erythropygia, 237, 336, 337.
—— fluvicola, 337.
—— frenata, 336.
—— fretensis, 336.
—— gutturalis, 336.
—— hyperythra, 237, 336.
—— japonica, 337.
Hirundo jewan, 336.
—— lunifrons, 263.
—— panayana, 336.
—— riocouri, 423.
—— ruficeps, 337.
—— rufula, 77, 237, 337.
—— rupestris, 349, 391.
—— rustica, 177, 237, 336, 339.
—— savignii, 423.
—— senegalensis, 337.
—— striolata, 337.
—— tytleri, 336.
Homraius bicornis, 349.
Horeites robustipes, 398.
Houbara macqueeni, 415.
—— undulata, 415.
Huhua nipalensis, 253, 254.
—— orientalis, 253.
—— pectoralis, 253.
Hydrobata asiatica, 374.
—— cashmiriensis, 374.
—— sordida, 374.
Hydrochelidon fissipes, 205.
—— leucoparia, 134.
—— plumbea, 45.
Hydrocissa affinis, 349.
—— albirostris, 349, 350, 351.
—— convexa, 349, 350, 351.
—— coronata, 349.
Hydrophasianus chirurgus, 405.
—— sinensis, 293.
Hydropsalis forcipata, 209.
—— pallescens, 209.
—— torquata, 210.
—— ypanemæ, 209.
Hyloterpe philomela, 368.
Hypolais salicaria, 187.
Hypotænidia philippensis, 335.
—— severus, 237.
—— subbuteo, 128, 238, 237, 377.
Hypotriorchis chicquera, 222.
—— concolor, 127, 237.
—— cuvieri, 237.
—— eleonoræ, 128, 387.
—— frontatus, 235.
—— lunulatus, 235.

Ibis alba, 32.
—— ordi, 32.
—— rubra, 32.
Ichthyaetus nanus, 244.
Icteria velasquezi, 202.
—— virens, 202.
Icterus affinis, 203.
—— spurius, 203.
Ieracidea berigora, 236.
—— occidentalis, 236.
Ieroglaux superciliaris, 257.
Indicator xanthonotus, 357, 363.
Indopicus carlotta, 355.
Iora nigricapilla, 318, 322.
—— scapularis, 318.
—— typhia, 318.
—— zeylanica, 320, 321.
Irena puella, 221.
Ispida bicincta, 86.
Ixus chalcocephalus, 323.
—— chrysorrhoides, 133.
—— flammeus, 369.
—— hæmorrhous, 318.
—— jocosus, 221.
—— squamatus, 323.
—— xanthopygius, 292.

Junco alticola, 193.
Jynx indica, 356.
—— torquilla, 179, 284, 356.

Ketupa ceylonensis, 254.
—— flavipes, 254, 255.
—— javanensis, 254, 255.
Kittacincla auricularis, 109.

Lagenoplastes ariel, 337, 338.
—— empusa, 337.
Lagopus albus, 52, 213, 414.
—— americanus, 214.
—— grœnlandicus, 214.
—— hemileucurus, 213, 214.
—— hyperboreus, 214.
—— islandorum, 214.
—— leucurus, 213.
—— mutus, 213.
—— persicus, 214.
—— reinhardti, 214.
—— rupestris, 213, 214.
—— scoticus, 213, 214.
Lampornis prevosti, 195.
Lamprococcyx plagosus, 331.
Lamprocolius defilippii, 415.
Lampropsar dives, 418.

Lamprotreron superbus, 333.
Lanius algeriensis, 367.
—— arenarius, 367.
—— boulboul, 375.
—— excubitor, 380.
—— ferrugineus, 276, 278.
—— hardwickii, 129.
—— isabellinus, 367.
—— lahtora, 367.
—— lucionensis, 135, 295, 394.
—— melanocephalus, 323.
—— meridionalis, 378, 380.
—— minor, 380.
—— nigriceps, 367.
—— rufus, 178, 180, 279.
—— rutilus, 380.
Larus argentatus, 16, 103, 107.
—— californicus, 272.
—— canus, 16.
—— cinereocaudatus, 424.
—— delawarensis, 271.
—— frobeeni, 424.
—— glaucus, 218, 350.
—— heermanni, 198.
—— ichthyaetus, 411.
—— islandicus, 350.
—— marinus, 16.
—— occidentalis, 271.
—— rissa, 16.
—— smithsonianus, 272.
Larvivora brunnea, 315.
—— cyana, 315.
—— gracilis, 315.
—— superciliaris, 315.
Layardia subrufa, 303.
Leguatia gigantea, 167.
Leucocerca albofrontata, 219.
—— aureola, 370.
—— compressirostris, 370.
—— fuscoventris, 370.
—— leucogaster, 371.
—— pectoralis, 371.
Leucodiophron chinense, 300.
—— taivanum, 300.
Limnocinclus acuminatus, 334.
Limosa fedoa, 39, 269.
Lipaugus rufescens, 203.
Lithofalco ardesiacus, 237.
—— chiquera, 248.
Lobivanellus lobatus, 334.
Locustella minuta, 293.
Lophodytes cucullatus, 44.
Lopholæmus antarcticus, 325, 333.
Lophortyx californicus, 27, 265, 266.
—— gambeli, 28, 46, 49, 52, 262, 265.
Lophospiza trivirgata, 234, 395.
Loriculus coulaci, 226.
—— galgulus, 130.
—— vernalis, 226.
Lorius domicella, 370.
Loxia curvirostra, 130, 350, 388.
—— himalayana, 350.
—— mexicana, 193.
—— pityopsittacus, 350.
Lusciola cyane, 315.
Lyncornis cerviniceps, 342.
—— temmincki, 342.
Lyrurus tetrix, 213.

Macropygia phasianella, 334.
Macrorhamphus griseus, 36, 37.
—— scolopaceus, 271.
Malacocercus malcolmi, 228.
Malacorhynchus membranaceus, 335.
Mareca americana, 43.
Mascarinus madagascariensis, 171.
Mecistura swinhoii, 116.
Megalæma corvina, 359.
—— flavifrons, 227.
—— hodgsoni, 358.
—— indica, 349, 358.
—— lineata, 358, 359.
—— nuchalis, 296, 357, 401.
—— philippensis, 349, 359.
—— viridis, 359.
—— zeylanica, 374.
Megalophonus rufocinnamomeus, 415.
Megaloprepia magnifica, 333.
Megapodius tumulus, 325.
Melaniparus semilarvatus, 415.
Melanocorypha calandra, 286, 380.
Meleagris gallopavo, 25.
Melopelia leucoptera, 24.
Melopsittacus undulatus, 332, 370.
Melospiza fallax, 263.
—— melodia, 263.
Meniceros bicornis, 350.
Mergulus alle, 102, 107.
Mergus americanus, 44.
Meropicus atricapillus, 227.
Meropixus atricapillus, 322.
Merops ægyptiacus, 343.
—— ægyptius, 83, 344.
—— apiaster, 81, 83, 84, 178, 184, 344.
—— badius, 344.
—— bicolor, 344.
—— castaneus, 344.
—— chrysocercus, 344.
—— cyanopygius, 344.
—— ferrugeiceps, 344.
—— hypoglaucus, 344.
—— lamarcki, 343.
—— latreillii, 344.
—— melanurus, 344.
—— ornatus, 326, 344, 345.
—— philippensis, 344.
—— philippinus, 129.
—— quinticolor, 344.
—— sumatranus, 344.
—— viridis, 83, 84, 343, 344, 345.
—— viridissimus, 343.
Merula albocincta, 375.
—— boulboul, 375, 376.
—— castanea, 375, 376.
—— leucogaster, 376.
—— unicolor, 374.
—— vulgaris, 375.
Metopidius indicus, 293.
Micrastur concentricus, 115.
—— gilvicollis, 115.
—— macrorhynchus, 115.
Microglossum aterrimum, 171.
Micronisus soloensis, 240. 403.
—— virgatus, 403.
Micropalama grisea, 271.
—— himantopus, 36, 37, 271.
Microscelis amaurotis, 132.
Micrura superciliaris, 373.
Milvus affinis, 248, 258, 349, 422.
—— govinda, 243, 248, 349, 420, 422.

Milvus ictinus, 94, 179, 182, 183, 186, 258, 390.
—— melanotis, 248, 422.
—— migrans, 179, 185, 186, 248, 249, 422.
Mimeta affinis, 325, 330.
—— viridis, 330.
Mimocitta plumbea, 121.
Mimus gracilis, 202.
Mirafra cantillans, 367.
Mitrephorus aurantiiventris, 214.
Mixornis rubricapillus, 310.
Molothrus cabanisi, 418.
—— rufoaxillaris, 418.
Monticola erythroptera, 374.
Montifringilla nivalis, 288.
Motacilla alba, 187, 290, 291.
—— albicilla, 314.
—— boarula, 138.
—— japonica, 291.
—— lugens, 291.
—— lugubris, 291.
—— luteola, 314.
—— mugimaki, 314.
—— sulphurea, 96, 166, 290, 323, 386, 391.
—— tiphia, 317.
—— vidua, 291.
—— zeylonica, 318, 320.
Muelleripicus pulverulentus, 355.
Muscicapa albicilla, 315.
—— albogularis, 370.
—— atricapilla, 176, 180.
—— erythaca, 314.
—— griseisticta, 315.
—— grisola, 314.
—— hæmorrhusa, 318.
—— hemileucura, 372.
—— hylocharis, 314.
—— latirostris, 315.
—— leucogaster, 371.
—— longipes, 373.
—— luteola, 313.
—— melanictera, 316, 320, 321, 322, 323, 423.
—— parva, 372.
—— rufogularis, 372.
—— rupestris, 372.
—— solitaria, 373.
—— tricolor, 372.
Muscicapula æstigma, 372.
—— ciliaris, 372.
—— leucoschista, 372.
Muscicapula superciliaris, 372.
Muscisaxicola albifrons, 57, 58, 59.
—— albilora, 59.
—— albimentum, 57.
—— brunnea, 59.
—— capistrata, 59.
—— cinerea, 57, 59.
—— flavinucha, 58, 59.
—— flavivertex, 58.
—— macloviana, 58, 59.
—— maculirostris, 57, 59.
—— mentalis, 58, 59.
—— nigrifrons, 58, 59.
—— rubricapilla, 58, 59.
—— rufivertex, 58, 59.
—— striaticeps, 59.
Mycteria americana, 196.
Myiagra azurea, 370.
—— plumbea, 325.
Myiolestes vitiensis, 173.
Myiomela montium, 392.
Myristicivora spilorrhoa, 325.
Myzantha ignipectus, 365.
Myzomela sanguinolenta, 330.

Nectarinia flammaxillaris, 129.
Neophron ginginianus, 233
—— percnopterus, 184, 233, 234, 380.
—— pileatus, 234.
Neopus malaiensis, 241.
Nettapus albipennis, 350.
—— coromandelianus, 350.
Nettion carolinensis, 43, 263.
Niltava macgrigoriæ, 372.
Ninox japonicus, 307.
Nisastur badius, 248.
Nisus brutus, 211.
—— gularis, 239.
—— minutus, 240.
Noctua indica, 257.
—— meridionalis, 257.
—— polleni, 211.
Notornis alba, 159.
—— cærulescens, 167.
—— mantelli, 163, 167.
Nucifraga multimaculata, 221.
Numenius arquata, 101, 107, 137.
—— borealis, 40.
—— hudsonicus, 40, 197.
—— longirostris, 40, 197, 208, 269.
Numenius phæopus, 101, 107.
—— uropygialis, 134, 137.
Nyctea nivea, 414.
Nyctherodius violaceus, 32.
Nyctiardea gardeni, 32, 263.
Nyctibius jamaicensis, 194.
Nycticorax caledonicus, 335.
—— griseus, 293, 297.
Nyctidromus americanus, 203.
—— guianensis, 203.
Nyctiornis amictus, 345.
—— athertoni, 345.
—— malaccensis, 345.

Ocydromus australis, 114.
Œdemia nigra, 102, 107.
Œdicnemus crepitans, 38, 178, 389, 415.
—— grallarius, 334.
—— indicus, 415.
—— inornatus, 415.
Ombria psittacula, 415.
Oncostoma cinereigulare, 194.
Onychoprion melanauchen, 221.
Oreocætes erythrogaster, 374.
Oreocincla hancii, 304.
—— nilgiriensis, 376.
Oreoperdix crudigularis, 133, 134.
Oreortyx pictus, 27, 51, 266.
Oriolus chinensis, 138.
—— galbula, 95, 106, 182.
Ornismya cinnamomea, 204.
Ortalida maccalli, 23, 24, 25.
Ortygometra jamaicensis, 198.
Ortyx texanus, 27.
—— virginianus, 49, 53, 55.
Otis tarda, 381.
—— tetrax, 174, 377, 379.
Otocompsa emeria, 370.
Otocorys alpestris, 288, 289.
—— bilopha, 289.
—— penicillata, 288.
Otus brachyotus, 258.
—— japonicus, 255.

Otus scops, 255.
—— vulgaris, 258.
Oxylophus glandarius, 64, 65, 174, 177, 179, 184, 187, 281.
Oxynotus ferrugineus, 224, 275, 276, 278.
—— newtoni, 278, 280.
—— rufiventer, 278.
—— typicus, 278, 280.

Pachycephala græffii, 172.
—— optata, 172.
—— rufiventris, 329.
Pagophila eburnea, 216, 218.
Palæornis alexandri, 353.
—— calthrapæ, 227.
—— columboides, 353.
—— derbianus, 353.
—— erythropygius, 221.
—— javanicus, 353.
—— ponticerianus, 354.
—— rosa, 353, 354.
—— schisticeps, 353.
Palumbus elphinstonii, 226, 313.
—— pulchricollis, 313, 396.
—— torringtoni, 226.
Pandion haliaetus, 307.
Panyptila sancti-hieronymi, 195.
Paradisea apoda, 130.
Paradoxornis ruficeps, 301.
Pardalotus affinis, 126, 325, 327.
—— melanocephalus, 126, 127.
—— pipra, 365.
—— punctatus, 126, 127.
—— striatus, 126.
Parisoma monachus, 322.
Parula brasiliana, 206.
—— inornata, 206.
Parus ater, 285.
—— cæruleus, 177.
—— hudsonicus, 121.
—— insperatus, 308, 402.
—— littoralis, 121.
—— lugubris, 285.
—— major, 177, 285, 308.
—— monachus, 322.
—— monticolus, 308.
Passer domesticus, 177, 295, 418.
—— indicus, 419.
—— montanus, 401, 419.
—— russatus, 295.
—— salicicolus, 182.
Passerculus alaudinus, 268, 269.
—— anthinus, 268.
—— rostratus, 268.
—— savanna, 269.
Pavo nigripennis, 412.
Pediœcetes columbianus, 213.
—— phasianellus, 213.
Pelecanus bassanus, 13.
—— conspicillatus, 335.
—— erythrorhynchus, 45, 271.
—— fuscus, 270, 271.
—— philippensis, 297.
—— trachyrhynchus, 263.
Pelionetta perspicillata, 270.
Penelopides ginginianus, 350.
—— panini, 350.
Perdix barbata, 362.
—— cinerea, 362, 384.
—— hodgsoniæ, 362.
Pericrocotus ardens, 369.
—— brevirostris, 369.
—— cinereus, 369.
—— elegans, 369.
—— erythropygius, 228.
—— exul, 369.
—— flammeus, 368, 369.
—— griseogularis, 399.
—— igneus, 369.
—— miniatus, 369.
—— minutus, 369.
—— peregrinus, 368, 369.
—— roseus, 368.
—— solaris, 369.
—— speciosus, 368, 369.
—— xanthogaster, 369.
Pernis apivorus, 244.
Petrochelidon albilinea, 192.
—— littorea, 192.
—— swainsoni, 192.
Petrocincla manillensis, 136.
—— saxatilis, 391.
Petrocossyphus affinis, 374.
—— cyanus, 374.
Petrœca goodenovii, 328.
Petronia stulta, 377.
Phaethornis cephalus, 204.
—— longirostris, 204.
Phalacrocorax carbo, 16.
—— graculus, 16.
—— floridanus, 200.
—— mexicanus, 200.
—— novæ-hollandiæ, 335.
Phalacrocorax stictocephalus, 335.
Phalaropus wilsoni, 35, 198, 263.
Phaps chalcoptera, 333.
—— histrionica, 333.
Phasianus torquatus, 404.
Phlexis layardi, 139, 140, 424.
—— victorini, 140.
Philomela luscinia, 177.
Phodilus badius, 251, 252.
Phœnicophaus pyrrhocephalus, 227.
Phonipara pusilla, 193.
Phyllopneuste bonellii, 178.
—— brevirostris, 410.
—— schwarzi, 118.
—— sylvicultrix, 394.
—— tristis, 409, 410.
Phyllornis cyanopogon, 349.
—— javensis, 349.
Phylloscopus rufus, 235.
—— sylvicultrix, 135, 295.
—— trochilus, 235, 374.
Piaya mehleri, 204.
—— mexicana, 204.
Pica bottanensis, 61.
—— caudata, 60, 65, 175, 177.
—— hudsonica, 61.
—— mauritanica, 61, 65.
—— nuttalli, 61.
—— sericea, 61.
Picus analis, 354.
—— andamanensis, 221, 354.
—— atratus, 354.
—— blanfordi, 354.
—— brunneifrons, 354.
—— cruentatus, 283, 284.
—— delesserti, 355.
—— erythronotus, 355.
—— goensis, 355.
—— gutturalis, 355.
—— humeralis, 355.
—— kaleensis, 134, 137.
—— khan, 354.
—— macii, 354.
—— mahrattensis, 354.
—— major, 99, 283, 284, 355, 385, 388.
—— martius, 411.
—— medius, 283, 354.
—— minor, 183, 284.
—— numidicus, 283.
—— pectoralis, 354.
—— strenuus, 355.

Picus strictus, 355.
—— sultaneus, 355.
—— syriacus, 62, 283, 284, 355.
Piezorhynchus nitidus, 325, 328.
Pipastes agilis, 409.
Pipilo aberti, 259, 261, 262.
—— mesoleucus, 259, 262.
—— oregonus, 193.
Piprisoma agile, 365.
Pitta nigricollis, 374.
Planesticus atrogularis, 376.
—— fuscatus, 376.
—— ruficollis, 376.
Platalea ajaja, 33, 151.
—— leucorodia, 101, 107.
Platibis flavipes, 335.
Platycercus novæ-zealandiæ, 114.
Platyrhynchus albicollis, 370.
Plectrophanes nivalis, 96, 107.
Ploceus baya, 340.
Plotus anhinga, 45.
Pluvianus ægyptius, 409.
Podargus phalænoides, 326.
—— strigoides, 325, 326.
Podiceps affinis, 415.
—— californicus, 46, 200, 273.
—— cooperi, 415.
—— dominicensis, 205.
—— gularis, 335.
—— nigricollis, 187.
Podilymbus podiceps, 46, 263.
Poephila cincta, 329.
Poliaetus ichthyaetus, 243.
Polioptila cærulea, 202.
—— mexicana, 202.
—— superciliaris, 190.
Poliornis poliogenys, 136, 245, 246.
—— pygmæus, 246.
Polyphasia merulina, 363.
—— nigra, 363.
—— tenuirostris, 283, 363.
Polyplectron chinquis, 56.
—— germaini, 56.
Pomatorhinus erythrogenys, 361.
—— horsfieldi, 226.
—— melanurus, 226.
Pomatorhinus musicus, 401.
Poospiza belli, 264.
—— bilineata, 264.
Porphyrio alba, 159.
—— cærulescens, 167.
—— melanotus, 114.
—— poliocephalus, 298.
—— smaragdinus, 298.
Porphyriops leucopterus, 415.
Porzana carolina, 40, 411.
—— noveboracensis, 40.
Potamodus cettii, 178, 179, 184, 383.
Pratincola bicolor, 349.
—— caprata, 350.
—— rubicola, 388.
Procellaria glacialioides, 125.
Progne dominicensis, 203.
—— leucogastra, 203.
Psalidoprogne cypselina, 343.
Psaltriparus melanotis, 190.
Psaropholus ardens, 297, 398.
—— trailli, 398.
Pseudochelidon eurystomina, 343.
Psittacus mauritianus, 168, 171.
—— pachyrhynchus, 171.
Psophodes crepitans, 329.
Ptenœdus rufescens, 328.
Pterocles alchata, 379.
—— arenarius, 174, 379.
—— setarius, 178.
Ptilonopus swainsoni, 332.
Ptilonorhynchus holosericeus, 325, 330.
Ptiloskelos amherstii, 254.
Ptilotis flava, 325.
Ptionoprogne concolor, 338.
—— rupestris, 338.
Ptyonura albifrons, 57.
—— frontalis, 59.
Puffinus anglorum, 104, 107.
—— major, 103, 107.
—— obscurus, 104, 107.
Pycnonotus atricapillus, 320, 322.
—— hæmorrhous, 219.
Pycnoptilus floccosus, 419.
Pyrgisoma leucote, 205.
Pyrrhocorax alpinus, 73, 288.
Pyrrhophæna cerviniventris, 195.
—— cinnamomea, 204.
—— cyanura, 195.
—— devillii, 204.
—— riefferi, 195.
Pyrrhula coccinea, 97, 349.
—— europæa, 108.
—— murina, 97, 105, 107, 108.
—— vulgaris, 97, 108, 349, 388.

Querquedula angustirostris, 425.
—— cyanoptera, 263.
—— discors, 40.
Quiscalus macrurus, 194.
—— major, 194.

Rallina pœciloptera, 171.
Rallus dieffenbachi, 114.
—— elegans, 40.
—— striatus, 394.
—— virginianus, 40, 265.
Recurvirostra americana, 35, 198, 263.
—— occidentalis, 198.
Reguloides superciliosus, 135.
Regulus cristatus, 96, 106, 350.
—— himalayanus, 350.
Rhamphocelus uropygialis, 193.
Rhinoptilus bitorquatus, 228.
Rhipidura albofrontata, 370.
—— aureola, 370.
—— fuscoventris, 371.
Rhyacophilus solitarius, 38.
Rhynchops nigra, 45, 400.
Rhyticeros plicatus, 350, 351.
—— ruficollis, 350, 351.
—— subruficollis 350, 351.
Rhytidoceros obscurus, 350.
Rissa tridactyla, 103, 107.
Rubigula aberrans, 322.
—— flaviventris, 370.
—— gularis, 318, 322.
—— melanictera, 321.
Ruticilla cairii, 390.
—— fuliginosa, 399.

Ruticilla phœnicura, 177, 391.
—— tithys, 390, 391.

Salicaria cantans, 397.
Salpinctes obsoletus, 52.
Salpornis spilonotus, 228, 365.
Saxicola atrigularis, 409.
—— aurita, 185.
—— cachinnans, 185.
—— capistrata, 409.
—— deserti, 309.
—— leucomela, 409.
—— montana, 409.
—— œnanthe, 96, 106.
—— rubeculoides, 372.
—— stapazina, 185, 386.
Sayornis fuscus, 261.
—— nigricans, 261.
—— sayus, 261.
Scelostrix candida, 251.
—— capensis, 251.
Scolecophagus cyanocephalus, 267.
Scolopax gallinago, 137.
—— gallinula, 137.
—— rusticola, 101, 107, 108, 418.
Scops asiatica, 255.
—— brasiliensis, 204.
—— choliba, 204.
—— crucigera, 204.
—— giu, 175, 179, 391.
—— japonicus, 307.
—— malayensis, 255.
—— pennatus, 255.
—— spilocephalus, 255.
—— sunia, 255, 307.
—— zorca, 255.
Scotopelia peli, 423.
Scythrops novæ-hollandiæ, 331.
Selenidera langsdorffi, 357.
Sericulus melinus, 325, 330.
Serilophus rubropygius, 349.
Serinus hortulanus, 98, 107, 176, 183, 186, 215.
Sibia auricularis, 110, 400, 401.
—— capistrata, 110.
—— gracilis, 110.
—— melanoleuca, 110.
—— picaoides, 110.
Siphia erythaca, 394.
—— innexa, 394.
—— leucomelanura, 395.
—— rufigula, 372.
Siphia strophiata, 395.
—— superciliaris, 372, 395.
Siphonorhis americanus, 203.
Sisura inquieta, 328.
Sitta aculeata, 366.
—— cæsia, 280, 285, 389.
—— carolinensis, 366.
—— castanea, 366.
—— castaneiventris, 366.
—— cinnamomeiventris, 366.
—— europæa, 366.
—— himalayensis, 366.
—— krueperi, 285, 366.
—— syriaca, 285, 366.
Somateria mollissima, 16.
Spermophila badiiventris, 214.
—— collaris, 214.
—— fortipes, 214.
—— hicksi, 214.
Sphecotheres maxillaris, 330.
Sphenocercus formosæ, 122, 311.
—— sieboldi, 122, 311.
—— sororius, 311, 402, 416.
Sphenœacus galactodes, 336.
Spiloglaux boobook, 326.
Spilornis, bacha, 242, 243, 253, 304.
—— bido, 304.
—— cheela, 242, 243, 248, 253, 304.
—— holospilus, 243, 304.
—— hoya, 304, 306, 399, 421.
—— orientalis, 421.
—— rufipectus, 243.
—— spilogaster, 243.
Spizaetus alboniger, 241.
—— andamanensis, 412.
—— borneonensis, 241.
—— caligatus, 241.
—— cirrhatus, 242.
—— kieneri, 241, 242.
—— limnaetus, 241, 242, 412.
—— nipalensis, 227, 242.
Spizella pinetorum, 193.
Squatarola helvetica, 34, 196.
Stachyrhis chrysea, 310, 311.
—— præcognitus, 310.
Stercorarius parasiticus, 127, 218, 220.
Sterna acuflavida, 272.
—— antillarum, 199, 205.
—— aranea, 44.
—— atrofasciata, 425.
—— dougalli, 103, 107.
—— fluviatilis, 102, 107.
—— forsteri, 199, 272.
—— frenata, 44, 205.
—— fuliginosa, 44.
—— havelli, 272.
—— hirundo, 135.
—— panaya, 199.
—— panayensis, 200.
—— paradisea, 199.
—— regia, 44.
—— superciliaris, 199.
—— velox, 134.
—— wilsoni, 44.
Stictoptera bichenovii, 325, 329.
Strepsilas interpres, 34, 100, 107, 198.
Streptocitta albicollis, 210.
Strigops habroptilus, 114.
Strix affinis, 251.
—— candida, 250, 396, 397.
—— capensis, 250.
—— delicatula, 250, 251.
—— flammea, 94, 106, 179, 250.
—— indica, 250.
—— javanica, 250, 251.
—— numida, 257.
—— orientalis, 253.
—— pagodarum, 253.
—— personata, 251.
—— pithecops, 396, 397.
—— poensis, 251.
—— pusilla, 250.
—— seloputo, 253.
—— spadicea, 257.
—— sumatrana, 254.
—— superciliaris, 257.
—— uralensis, 116.
Sturnella hippocrepis, 203.
—— ludoviciana, 203.
Sturnopastor nigricollis, 292.
Sturnus dauricus, 131.
—— unicolor, 177, 180, 183, 377.
—— vulgaris, 98, 107.
Sula alba, 13.
—— bassana, 1, 13.
—— melanura, 5, 15.
—— piscator, 200.
Suthora bulomachus, 300.
Suya gracilis, 133.
—— lepida, 133.
Sycalis aureiventris, 425.

Sycalis chrysops, 194.
Sylvia affinis, 350.
—— atricapilla, 95, 106, 177, 322, 388.
—— brachyptera, 139.
—— cinerea, 388.
—— conspicillata, 185, 380.
—— curruca, 350.
—— doriæ, 415.
—— hortensis, 378, 397.
—— leucoptera, 317.
—— melanocephala, 378.
—— orphea, 180.
—— phragmitis, 180.
—— schwarzi, 118.
Symphemia semipalmata, 37, 198, 269.
Synallaxis nigrifumosa, 214.
Synœcus australis, 334.
Syrnium aluco, 180.
—— ocellatum, 253.
Syrrhaptes paradoxus, 119.

Tachornis phœnicobia, 341.
Tachypetes aquilus, 45.
Tachyphonus rubrifrons, 119.
—— xanthopygius, 119.
Tænioptera rubetra, 59.
Talegallus lathami, 334.
Tantalus loculator, 32, 262.
Tanysiptera dea, 117.
—— sylvia, 335, 336.
Tchitrea affinis, 370.
—— holosericea, 211.
—— mutata, 211.
—— paradisi, 346, 370.
—— pretiosa, 211.
—— principalis, 297.
Teleophonus tchagra, 380.
Temenuchus albofrontatus, 227.
—— erythropygius, 220.
—— sinensis, 394.
Tesia castaneocoronata, 373.
—— cyaniventer, 373.
Tetrao urogalloides, 213.
—— urogallus, 213, 383.
Tephrodornis grisola, 367.
—— gularis, 367.
—— ponticeriana, 367.
—— sordida, 367.
—— superciliosa, 367.
Thalasseus acuflavidus, 198.
Thalasseus elegans, 198.
—— regius, 199, 272.
Thalassidroma segethi, 424.
—— wilsoni, 104, 107, 108.
Thamnophilus affinis, 119, 120.
—— doliatus, 120.
—— hollandi, 214.
—— melanocrissus, 203.
—— melanurus, 203.
—— nigricristatus, 119, 120.
—— radiatus, 120.
Thryothorus albinucha, 191.
—— brunneus, 214.
—— felix, 205.
—— modestus, 205.
—— petenicus, 191.
Tichodroma muraria, 284, 391.
Tigrisoma cabanisi, 205.
—— tigrinum, 205.
Timalia pœcilorhyncha, 303.
Tinamus cinnamomeus, 206.
—— delattrii, 206.
—— major, 204.
—— robustus, 204.
—— sallæi, 206.
Tinnunculus alaudarius, 93, 106, 180, 238.
—— cenchris, 178, 180, 239.
—— gracilis, 211.
—— japonicus, 238.
—— moluccensis, 238.
—— newtoni, 211.
—— punctatus, 211.
—— rupicolus, 237.
—— saturatus, 238.
—— sparverius, 267.
Toccus cineraceus, 350.
—— gingalensis, 227, 350, 352.
—— griseus, 350.
Todirhamphus chloris, 348.
—— collaris, 221.
—— pyrrhopygius, 325, 327.
—— sanctus, 327.
—— superciliosus, 348.
Totanus affinis, 134, 294.
—— calidris, 420.
—— fuscus, 212, 294, 295.
—— glottis, 350.
Totanus glareola, 137.
—— ochropus, 137.
—— stagnatilis, 350.
Treron chœroboatis, 313, 406.
—— formosæ, 311, 312, 313, 401, 406.
Tribura squameiceps, 397.
Tringa albescens, 227.
—— alpina, 136.
—— maculata, 36.
—— maritima, 101, 107.
—— wilsoni, 37.
Tringoides macularius, 38.
Trochilus alexandri, 265.
—— devillii, 204.
—— hemileucurus, 204.
Troglodytes aedon, 202.
—— europæus, 401.
—— hypaedon, 202.
—— intermedius, 202.
—— nipalensis, 373.
—— parvulus, 186, 284.
Trogon aurantiiventris, 194.
—— citreolus, 204.
—— elegans, 194.
Tropidorhynchus corniculatus, 325.
Tryngites rufescens, 39.
Turdulus chrysolaus, 375.
—— wardi, 375, 376.
Turdus albiceps, 135, 315.
—— albonotatus, 374.
—— atriceps, 323.
—— atrogularis, 376.
—— avensis, 375.
—— cardis, 136, 375.
—— dispar, 318, 322, 323.
—— erythroptera, 374.
—— fumidus, 376.
—— grayi, 202.
—— hodgsoni, 349.
—— iliacus, 177.
—— interpres, 375.
—— javanicus, 376.
—— mandarinus, 136.
—— merula, 95, 106, 136, 177, 292.
—— musicus, 177, 292.
—— naumanni, 315.
—— olivaceus, 349.
—— olivacinus, 349.
—— peroni, 375.
—— pilaris, 292,
—— plumbeus, 121.
—— rubripes, 121.
—— ruficollis, 315.
—— sibiricus, 136.

Turdus unicolor, 375.
—— viscivorus, 178, 280, 349.
—— wardi, 375.
Turnix andalusica, 350.
—— dussumieri, 350, 403.
—— maculosa, 131, 404.
—— ocellata, 131, 404.
—— rostrata, 131, 207, 403, 404.
—— taigoor, 297, 404.
—— varia, 334.
Turtur auritus, 349.
—— chinensis, 292.
—— risorius, 298.
—— rupicolus, 313, 349, 401.
—— suratensis, 292.
—— tigrinus, 292.
Tyrannula richardsoni, 203.
Tyrannus borealis, 203.

Upucerthia albiventris, 424.
Upupa ceylonensis, 366.
Upupa epops, 80, 99, 107, 176, 222, 367.
—— longirostris, 366.
—— nigripennis, 366.
Uria craverii, 415.
—— grylle, 16.
—— troile, 16.
Urocissa cærulea, 121, 296, 303.

Vanellus cristatus, 100, 107, 420.
Vanga flaviventris, 323.
Vireo ochraceus, 193.
—— pallens, 193.
—— semiflavus, 193.
Vireosylvia cobanensis, 202.
—— philadelphica, 202.
Volvocivora schierbrandi, 116.
Vultur auricularis, 232.
—— calvus, 230, 233.
—— ginginianus, 234.
—— imperialis, 230.
—— indicus, 232.
Vultur kolbii, 232.
—— meleagris, 234.
—— monachus, 187, 380, 386, 388, 391.
—— rueppelli, 232.
—— tenuirostris, 232.

Xantholæma indica, 218, 358, 359.
Xenopirostris dami, 211.

Yungipicus hardwickii, 354.
—— moluccensis, 354.
—— sondaicus, 354.

Zanclostomus tristis, 364.
Zenaidura carolinensis, 23, 24.
Zonotrichia coronata, 268.
Zoothera imbricata, 376.
Zosterops cærulescens, 208.
—— dorsalis, 208.
—— flavirostris, 211.
—— simplex, 121, 310.

THE END.

PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET.

NEW SERIES.
VOL. II. No. 5.
JANUARY 1866.
Price 6s.

THE IBIS,

A

QUARTERLY JOURNAL OF ORNITHOLOGY.

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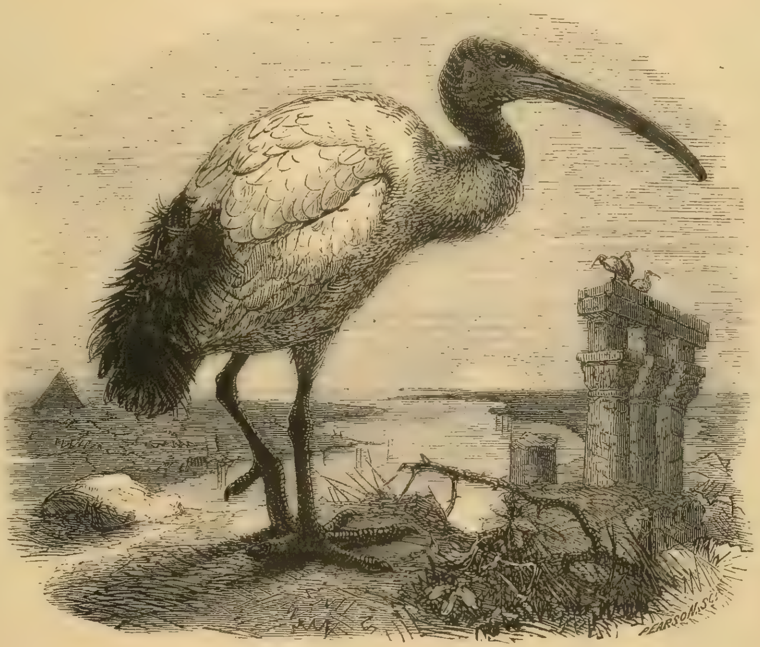

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CONTENTS OF NUMBER V.—NEW SERIES.

Page

I. On the Solan Goose, or Gannet (*Sula bassana*, Linn.). By Robert O. Cunningham, M.D. (Plate I.) 1

II. Notes on the Birds of Southern Texas. By H. E. Dresser 23

III. Field Notes on *Lophortyx gambeli*. By Elliott Coues, M.D. 46

IV. On a New Species of the genus *Polyplectron*. By D. G. Elliot, F.Z.S., &c. 56

V. Note on the Species of the genus *Muscisaxicola*. By P. L. Sclater, M.A., Ph.D., F.R.S., &c. 56

VI. On the Ornithology of Palestine. (Part III.) By the Rev. H. B. Tristram, M.A., F.L.S., C.M.Z.S. (Plate II.*) 59

VII. Notes on the Birds of the Azores. By Frederick Du Cane Godman, F.L.S., F.Z.S., &c. (Plate III.) 88

VIII. Note on "*Kittacincla auricularis*," Swinhoe. By P. L. Sclater, M.A., Ph.D., F.R.S., &c. (Plate IV.) 109

IX. Notices of Recent Ornithological Publications:—

1. *English*:—Tristram's 'Land of Israel:' Gould's 'Handbook to the Birds of Australia:' Travers on the Birds of the Chatham Islands 111

2. *German*:—Von Pelzeln on the Ornithology of the 'Novara' Voyage: Seidensacher on the Birds of Cilli 115

3. *Dutch*:—Harting on the Episternal Apparatus of Birds: Schlegel on the Kingfishers of the Dutch Indies: Schlegel's 'Dierentuin' 116

4. *Russian*:—Radde's 'Birds of South-eastern Siberia' 118

5. *American*:—Lawrence on Birds of Panama: Bryant's Papers in the Boston 'Proceedings.' 119

X. Letters, Announcements, &c.:—

Letters from Messrs. Swinhoe, Howard Saunders, E. P. Ramsay, Whitely, and J. H. Gurney. Interesting Discovery of Bones of *Didus ineptus* in Mauritius . 121

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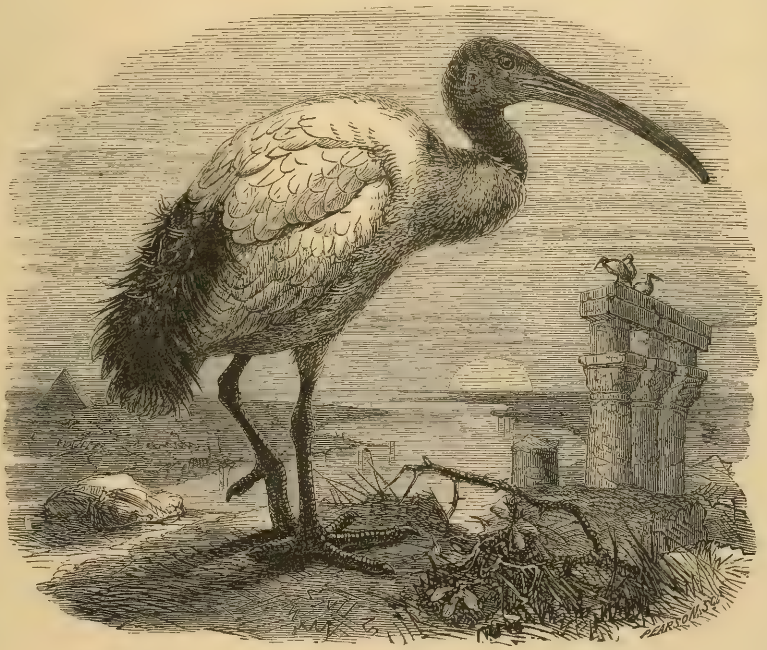

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CONTENTS OF NUMBER VI.—NEW SERIES.

⁂ Plate II. is given with this Number.

Page

XI. A Voice on Ornithology from Formosa. By ROBERT SWINHOE, Her Majesty's Consul, F.Z.S., &c. (Plate V.) 129

XII. On a New Genus of African Birds. By GUSTAV HARTLAUB, M.D., For. Mem. Z.S., &c. (Plate VI.) 139

XIII. Account of the late Discovery of Dodos' Remains in the Island of Mauritius. By GEORGE CLARK 141

XIV. On some Extinct Gigantic Birds of the Mascarene Islands. By H. SCHLEGEL, Director of the National Museum of the Netherlands, F.M.Z.S., &c. 146

XV. Evidence of a Species, perhaps extinct, of large Parrot (*Psittacus mauritianus*, Ow.), contemporary with the Dodo, in the Island of Mauritius. By Professor OWEN, F.R.S., &c. 168

XVI. On Five New Species of Birds from the Feejee Islands. By GUSTAV HARTLAUB, M.D., For. Mem. Z.S., &c. 171

XVII. Notes on the Ornithology of Spain. By Lord LILFORD, F.L.S., F.Z.S., &c. 173

XVIII. A further Contribution to the Ornithology of Guatemala. By OSBERT SALVIN, M.A., F.L.S., &c. 188

XIX. Notices of Recent Ornithological Publications:—

1. *English*:—Groom Napier's 'Food, Use, and Beauty of British Birds;' Swinhoe's 'Neau Show;' Lord on Nests and Eggs collected in North-west America; Taylor on *Zosterops cœrulescens* in New Zealand 206
2. *German*:—Von Pelzeln on Variation of Plumage in Birds, and on new *Caprimulgidæ* from Brazil 209
3. *Dutch*:—De la Fontaine's 'Faune du Pays de Luxembourg;' Schlegel on *Charitornis albertinæ*, and 'Contributions à la Faune de Madagascar' 211
4. *Danish*:—Steenstrup on the habits of the Goldfinch 212
5. *Norwegian*:—Collett on the Birds of Gudbrandsdal and Dovre 212
6. *American*:—Elliot's 'Monograph of the *Tetraoninæ*,' parts 4 and 5; Lawrence on the Birds of Central America 213

XX. Letters, Announcements, &c.:—

Letters from Messrs. Dawson Rowley and Archer Briggs, and Prof. Perceval Wright: Extracts from letters of Capt. Bulger, Mr. E. L. Layard, Capt. Blair, and Drs. Jerdon and D. Scott: Communications from Prof. Baird and Mons. F. Pollen 215

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CONTENTS OF NUMBER VII.—NEW SERIES.

Page

XXI. The Ornithology of India.—A Commentary on *Dr. Jerdon's* 'Birds of India.' By Edward Blyth, late Curator of the Museum of the Asiatic Society at Calcutta, Hon. Mem. As. Soc. 225

XXII. From Arizona to the Pacific. By Elliott Coues, M.A., M.D. 259

XXIII. On the Genus *Oxynotus* of Mauritius and Réunion. By François Pollen, Honorary Assistant of the Royal Museum of Leyden, &c. (Plates VII. and VIII.). 275

XXIV. On the Ornithology of Palestine. (Part IV.) By the Rev. H. B. Tristram, M.A., F.L.S., C.M.Z.S. 280

XXV. Ornithological Notes from Formosa. By Robert Swinhoe, Her Majesty's Consul, F.Z.S., &c. (Plate IX.) 292

XXVI. On the *Musicapa melanictera* of Gmelin. By the Viscount Walden, F.L.S., F.Z.S., &c. 316

XXVII. Letters, Announcements, &c. :—

Letters from Captain Powlett-Orde and Mr. C. B. Wharton ; Extract from a letter of Mr. C. J. Andersson 324

*** It having been recently resolved that the annual volume of 'The Ibis' should not in future much exceed 400 pages, we are compelled to omit from the present Number our usual "Notices of Recent Ornithological Publications," which could only have been given by excluding more important and interesting original matter.

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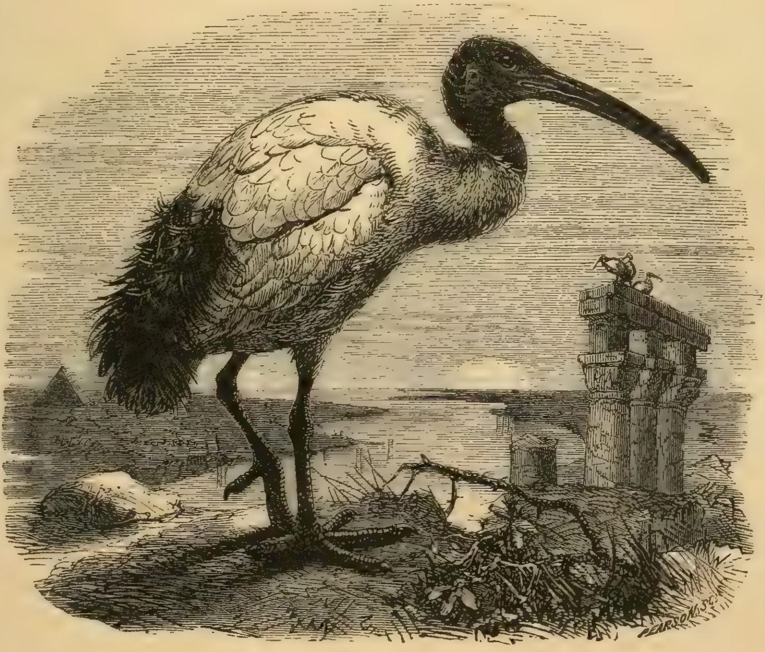

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CONTENTS OF NUMBER VIII.—NEW SERIES.

Page

XXVIII. Additional List of Birds from Port Denison. By EDWARD P. RAMSAY. 325

XXIX. The Ornithology of India.—A Commentary on *Dr. Jerdon's* 'Birds of India.' By EDWARD BLYTH, late Curator of the Museum of the Asiatic Society at Calcutta, Hon. Mem. As. Soc. 336

XXX. Notes on the Ornithology of Spain. By Lord LILFORD, F.L.S., F.Z.S., &c. (Plate X.). 377

XXXI. Ornithological Notes from Formosa. By ROBERT SWINHOE, Her Majesty's Consul, F.Z.S., &c. (Plate XI.). 392

XXXII. Note on the Distribution of the Species of *Chasmorhynchus*. By P. L. SCLATER, M.A., Ph.D., F.R.S. 406

XXXIII. Notices of Recent Ornithological Publications:—

1. *English*:—Owen's 'Anatomy of Vertebrates,' vol. ii.; Gould's 'Birds of Asia,' part xvii.; Newman's Reprint of Montagu's 'Ornithological Dictionary;' Ornithological papers in 'Journal of Asiatic Society' for 1865 408
2. *French*:—Report on A. Milne-Edwards's 'Recherches d'Anatomie Comparée' . 413
3. *Italian*:—De Filippi's 'Viaggio in Persia;' Salvadori's papers in 'Atti della Società Italiana' 414
4. *Scandinavian*:—Sundevall's 'Conspectus Avium Picinarum' 415
5. *American*:—Baird on 'Distribution and Migrations of North American Birds'; Elliot's 'Birds of North America'; Baird's 'Review of American Birds;' Cassin's 'Fasti Ornithologiæ,' No. 2, and 'Study of the *Icteridæ*;' Lawrence's 'Catalogue of Birds observed on New York, &c.' 416

XXXIV. Letters, Announcements, &c.:—

Letters from Mr. E. P. Ramsay, Capt. R. C. Beavan, Messrs. W. V. Legge, J. H. Gurney, and J. H. Gurney, Jun., Lord Walden, and Mr. E. L. Layard; Announcement of English Ornithological works in preparation, and of Mr. Andersson's projected 'Avifauna of South-western Africa' 419

Index 427

Title-page, Preface, Contents, &c.

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